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MAXIMUM UTILIZATION OF SANITARY LANDFILLS THROUGH INTEGRATED REGIONAL PLANNING. VOLUME I. STUDY SUMMARY

Orange County Road Department

Prepared for:

Public Health Service

March 1971

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FINAL REPORT

MAXIMUM UTILIZATION OF SANITARY LANDFILLS THROUGH INTEGRATED REGIONAL PLANNING VOLUME I—STUDY SUMMARY

MARCH 1971

Prepared For

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE • PUBLIC HEALTH SERVICE • SOLID WASTES PROGRAM

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46

FINAL REPORT

MAXIMUM UTILIZATION OF SANITARY LANDFILLS THROUGH INTEGRATED REGIONAL PLANNING

VOLUME I - STUDY SUMMARY

Prepared Under Grant No. 5-D01-UI-00113-02 (G06-EC-00113)
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
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NOTES ON REPORT ARRANGEMENT

Chapters are numbered with Roman numerals, with Arabic numerals used for page numbering within chapters.

Figures are numbered with Roman numerals which designate the chapter and with Arabic numerals which designate the sequence within the chapter and are located at the end of the chapter.

References noted throughout the text are listed in Appendix A which is located at end of the report.

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CHAPTER I

INTRODUCTION

The restoration, protection, and control of environmental quality has become a nationwide concern, with increasing awareness that physical environment, way-of-life, health, safety, and well-being are being threatened by environmental pollution; and with corresponding demands that abatement programs be initiated now for the preservation of the quality of life so justly deserved and so richly cherished. As a result, environmental quality control planning has taken on renewed emphasis and has increased at all levels of federal, state, and local governments.

This kind of planning has taken many shapes and forms and has involved many environmental fields, including water and air, sewerage, land use, parks and recreation, transportation, along with a myriad of planning programs which affect man's environment in one way or another. However, the majority of this planning has been single-purpose, giving little consideration to the total environmental picture or the interrelationships of the programs, or the effect one such program has upon another. What is lacking, and so greatly needed, is area-wide planning for environmental control; i.e., planning which will coordinate all environmental programs. Single-purpose planning is not sufficient. Planning for the proper management of single-purpose programs must be initiated if these programs are to succeed and the maximum benefits are to be derived.

ENVIRONMENTAL ROLE OF SOLID WASTE MANAGEMENT

The recognition and the proper management of the environmental problems associated with solid wastes have been slow in developing. The public's attitude toward solid waste has typically been one of "out-of-sight, out-of-mind." Little attention or concern has been focused on the complexities of the management of solid waste and the systems necessary for adequate collection, transportation, processing, and disposal. However, as the public has become more "pollution" minded, the proper and total management of the entire ecological system

is now being acknowledged as vital for the safeguarding and conservation of man's resources and environment. With this acknowledgment has emerged a recognition that solid waste is a problem in environmental management and must be adequately planned for if our environmental objectives are to be achieved.

Unfortunately, planning of solid waste management programs, to an even greater extent than other environmental programs, has typically been on the "single-purpose" level, with no consideration being given to coordinating such planning with area-wide needs and other planning activities. This is particularly true of solid waste disposal programs. Land use plans rarely consider the land use requirements for waste disposal. So-called comprehensive area-wide general planning programs often omit the necessary planning aspects of solid waste collection, transportation, and processing. This lack of coordinated effort and blending of planning processes often results in solid waste management control programs which are ineffectual, inefficient, and incapable of attaining their desired goals.

Effective mechanisms for the adequate control of the ever increasing problems associated with the discards of society, in the form of solid waste, must be developed. But such development can be effective only when it is accomplished in accord with total area-wide planning, that is planning which encompasses all environmental control programs and truly coordinates and integrates all planning activities and functions. Pollution control program planning must be accompanied by adequate planning for such control programs.

PROJECT STUDY

The concept of integrated area wide planning together with inter-agency cooperation is of greatest importance in the disposal function of a well conceived solid waste management program, particularly disposal utilizing sanitary landfills. Public acceptance of sanitary landfills is always difficult to attain and land use planners invariably neglect or ignore land use needs for disposal of solid waste. Planning for the beneficial reuse of completed sanitary landfills is often lacking or comes after completion rather than prior to the beginning of construction.

Realizing these facts and being firmly convinced that their solid waste disposal program could be of benefit to the whole area, officials of the County of Orange, California, received a grant from the Bureau of Solid Waste Management to develop a program which would, through county-wide integrated planning and cooperative effort, maximize the utilization of sanitary landfills, enhance the entire solid waste management program for the County, and perpetuate a well established disposal program for the preservation of the environmental quality of the County.

PROJECT OBJECTIVES

The total program of study for the project was a fully integrated two-year program of research and investigation, developed in cooperation with the Bureau of Solid Waste Management, Environmental Control Administration, Department of Health, Education, and Welfare, U. S. Public Health Service. It was funded, in part, through Study and Investigation Demonstration Grant D01-UI-0013 (G06-EC-00113). In March 1968, Engineering-Science, Inc. was engaged by the County of Orange to assist in the conduct of the study as principal consultant.

The basic objectives of the study were to develop the following:

(1) A long-term regional solid waste disposal program involving novel concepts for the reuse of sanitary landfill sites to obtain the maximum efficiency of use and reuse of publicly owned lands while minimizing overall costs of sanitary landfill operations.

(2) A prototype interagency planning program to integrate all governmental planning functions (highways, schools, flood control, water quality control, air pollution control, parks, recreation, refuse disposal, etc.), and to provide useful procedures and policies that will aid in securing the public's acceptance of regional solid waste management programs.

(3) An ordinance that will provide the means for implementing the regional solid waste disposal program developed from the interagency planning program.

This volume is a summary report on the activities and results of the study, and it is intended to document the processes and procedures utilized in attaining the objectives. It presents the "Orange County Story." In general it is a story of achievement. In some respects, it is a story of frustration. But, in the final analysis, it recounts a story of progress toward the goal of preserving the environmental quality of the County for the benefit of its citizens.

PROJECT CONCLUSIONS

The conclusions drawn from the work of the two-year study relative to solid waste management in the County of Orange are summarized as follows:

(1) Production of solid wastes within the County is expected to continue to increase at a rapid rate which will present an environmental health problem in the future unless the problem is given commensurate recognition and high priority at all levels of County government.

(2) Projected population growth and increased urbanization will endanger the proper disposal of solid waste unless planning for and location of disposal sites are initiated now and integrated with the total development growth of the County.

(3) Solid waste disposal by sanitary landfilling, complemented by transfer facilities, is the most economical and practical method of disposal for the County and will continue to be so for many years.

(4) Adequate disposal sites for sanitary landfilling exist within the County to satisfy disposal needs through at least the year 2010.

(5) Existing transfer facilities will need to be enlarged to handle the projected quantities of solid wastes.

(6) Increased regular yearly budgets for disposal and transfer equipment will be required.

(7) Negotiations for future disposal sites should begin now and a master plan showing all proposed future sites should be adopted so that County general planning will be cognizant of their existence.

(8) Existing solid waste management practices and organization are adequate but should be supplemented to provide for closer city and County coordination and cooperation, uniformity of practices, and regulation and enforcement.

(9) Integrated interagency participation and planning is needed and should be implemented through the County General Planning Program.

(10) Maximum utilization of sanitary landfills through integrated regional planning is possible, but will require time, education, and detailed planning as an overall aspect of the County's general development planning.

(11) The County General Planning Program must place the implementation of such planning high on the priority list.

(12) County-wide solid waste handling standards and regulations are needed.

(13) County ordinances relative to solid waste and the management thereof need to be amplified, reinforced, and made more stringent.

(14) Inadequate means or facilities exist to determine the exact weight of solid wastes being deposited at the County operated disposal stations.

PROJECT RECOMMENDATIONS

Based on the conclusions of the study and other factors encountered during the course of the research and investigation, it was recommended that:

(1) A solid waste management system and organization as described in this report be adopted.

(2) A solid waste management ordinance be adopted similar to the proposed ordinance presented in this report.

(3) An Advisory Council and Advisory Committee be authorized and appointed as outlined.

(4) In cooperation with the Health Department, municipal governments, sanitary districts, and the private refuse collector's association, detailed minimum rules, regulations, and standards for storage, collection, and transportation of solid wastes be formulated and adopted for County-wide use.

(5) The annual budget for the Refuse Disposal Division of the County Road Department be increased to provide adequate funds for the purchase of required equipment for disposal and transfer operations in order to furnish total transfer service and to meet projected disposal needs.

(6) Detailed topographic and geologic investigations immediately be undertaken for final determination of the suitability of proposed disposal sites.

(7) Operating costs of the County's solid waste disposal program continue to be financed from general tax revenue.

(8) Future required disposal sites be acquired through outright purchase, in lieu of the current practice of leasing, to provide more positive control of disposal operations, longevity and continuation of site use, better post-operative maintenance, and more beneficial use of public funds.

(9) Immediate action be initiated to negotiate for acquisition of required disposal sites.

(10) Consideration be given to the establishment of a special County Solid Waste Disposal Fund, to be derived and perpetuated from the apportionment of a set amount from the County's yearly general tax revenue; expenditures from the fund to be used for

outright acquisition of disposal facilities, yearly payment of existing lease agreements, capital expenditures for improvements, enlargement or addition of transfer facilities, disposal site development expenditures, landscaping, or any other capital expenditure over and above the normal maintenance and operating costs of the disposal program.

DETAILED REPORTS

A detailed presentation of the work of the first year of study is contained in a report published in April 1969 (Reference 1). A more detailed report on the achievements of the total study and, in particular, the work of the second year study effort, is contained in Volume II of this report, published in January 1971.

MANAGEMENT OF THE STUDY

Mr. A. S. Koch, County of Orange Road Commissioner and County Surveyor, served as Project Director for the study, assisted by Mr. T.P. O'Brien, Orange County Refuse Disposal Engineer.

Engineering-Science, Inc. personnel participating in the project were under the direction of Dr. Harvey F. Ludwig and assisted by Mr. Robert L. White and Mr. Frank R. Bowerman; Mr. Donald J. Martinson was Project Manager and Mr. G. Scott Robertson was Project Engineer; Dr. W. E. Gates and Dr. R. M. Males assisted in the work.

ACKNOWLEDGEMENTS

The participation, cooperation, and generous assistance of representatives and directors of many County Departments, State agencies, City personnel, owners of private collection agencies, and private citizens who served on the Technical Advisory Committee and the Inter-Agency Planning Committee is gratefully acknowledged.

CHAPTER II

STUDY AREA

PHYSICAL ENVIRONMENTAL SETTING

The Study Area, which encompasses all of Orange County, is located in the southern coastal area of the State of California (Figure II-1) and is bounded geographically by Los Angeles County on the northwest, San Bernardino and Riverside Counties on the northeast, San Diego County on the southeast, and the Pacific Ocean on the southwest (Figure II-2). The eastern border rises to an elevation of 5,687 feet at Santiago Peak in the Santa Ana Mountains.

The County is roughly rectangular in shape being approximately 40 miles in length and 20 miles in width, with the long axis oriented in the northwest-southwest direction. Of a total of 782 square miles, there are 289 square miles of incorporated area and 25 incorporated cities and 493 square miles of unincorporated area.

The Study Area is semiarid with an average rainfall of 15.93 inches. The average mean minimum and maximum temperatures are 47.6 and 76.3 degrees Fahrenheit, respectively; and the relative humidity ranges between an average minimum of 56 percent and an average maximum of 82 percent.

EMPLOYMENT AND LAND USE

In a very short span of time, Orange County has changed from a rural and agricultural area, with large areas of open space, to a highly urbanized area and industrial manufacturing center. Total civilian employment in 1969 averaged 456,000 with manufacturing and trade employment accounting for approximately 28.7 percent and 22.8 percent, respectively, of this total employment.

The predominant land uses within Orange County are (1) agriculture-open rural, 55.4 percent; (2) residential, 15.3 percent; (3) agriculture-crops, 10.3 percent; (4) commercial, 1.9 percent; and (5) industrial, 1.4 percent. The Cleveland National Forest area comprises approximately 10 percent of the total agriculture-open rural percentage.

Total urban area is projected to increase from an estimated 173,100 acres in 1970 to 367,200 acres in 2020; total nonurban area is projected to decrease from 334,670 acres in 1970 to 140,490 acres in year 2020.

POPULATION

The population growth of the County has been great and is expected to continue at a rapid rate. During the decade of 1950-1960, Orange County felt the impact of the tremendous urban sprawl being experienced throughout the southern California area. Population increased from 216,224 in 1950 to 703,925 in 1960, which amounted to a 225 percent increase. With a projected population of 1,460,000 for the 1970 Census, the population growth for the 1960-1970 decade would be 107 percent.

The County population as of 1 January 1969 was estimated as being 1,359,860. The projected population figures are 1.46 million in 1970; 2.28 million in 1980; 2.85 million in 1990; 3.25 million in 2000; and 3.9 million by the year 2020.

EXISTING SOLID WASTE MANAGEMENT PRACTICES

Collection

The collection and transportation function of a solid waste management system is composed of the facilities and equipment necessary to collect, transport, or transfer accumulated and stored refuse materials from the source of production and generation to either the final place of disposal (or predisposal processing), or to special equipment, facilities, or vehicles for large scale transferral and transportation of collected solid wastes to the place or places of disposal or predisposal processing.

Residents of the County are provided with collection service in various ways as follows:

(1) As a municipal service paid for out of city tax funds;
   (a) By city forces, and
   (b) By private operators under city contract;

(2) As a sanitary district service paid for out of sanitary district taxes; and

(3) By individual negotiated contracts paid for directly by the resident:

(a) With private operators operating under County, city or district franchises or contracts, and

(b) With private operators operating in nonfranchised areas.

The Board of Supervisors issues exclusive franchises to private refuse collectors for collection in unincorporated areas. The franchise grants exclusive rights within a particularly described area and at the same time makes the franchise holder responsible for providing service to all who desire it within that area. City and district franchises have similar features.

In general the collection procedures followed by the cities or private collection companies in the Study Area are those used nationally and are relatively simple in operation and organization. Refuse is picked up by one, two, or three-man crews, and transferred to closed compactor body collection trucks or open body dump type trucks. When the vehicle is full, the material is transported directly to a transfer station or a sanitary landfill disposal station. The pickup operations are organized on the daily route basis, permitting a definite collection schedule. These general collection procedures are essentially the same for municipal, commercial, and industrial customers.

Of the 25 incorporated cities within the County, only one utilizes municipally owned and operated equipment for residential and commercial collection purposes. Service in all other cities is provided by commercial collectors. Such service includes residential, commercial, and industrial pickup. These cities generally grant exclusive franchises or contracts to particular collectors for residential and commercial service, with some franchises also including industrial service. Usually, however, industrial service is open, with industries free to contract with whomever they please. This is also true, to a very limited extent, with commercial establishments.

Disposal and Transfer

An ordinance adopted in 1946 placed the responsibility of establishing and maintaining disposal and transfer facilities under the County. The costs of such operations are financed by the County General Tax Fund, whereby the cost of the program is shared by all property owners in the County. The disposal program is presently administered by the Refuse Disposal Division of the County Road Department under the direction of the Road Commissioner. The general disposal policy now prevailing is summarized as follows:

(1) Material deposited is limited to residential, commercial and industrial trash, mixed refuse, and approved industrial waste and bulky waste.

(2) Liquid wastes and wet garbage are not acceptable.

(3) Cannery and packing plant wastes are accepted by individual arrangement with the Refuse Disposal Division and only at those disposal sites designated by the Board of Supervisors.

(4) No charge is made for disposal at either the transfer stations or the landfill sites.

(5) Refuse originating outside the County is not acceptable.

(6) Disposal stations are open seven days per week, except for three legal holidays.

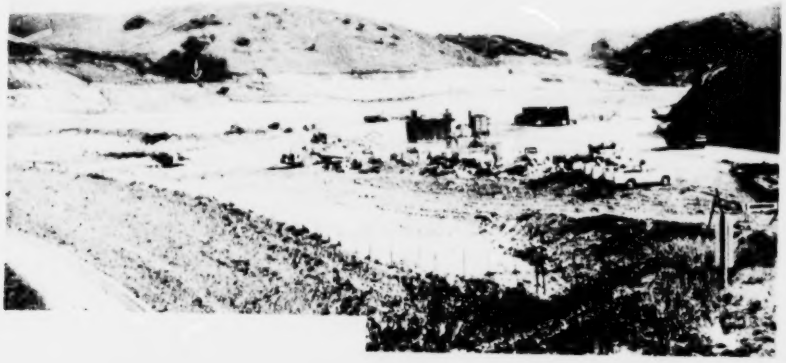
(7) Transfer stations are open six days per week, being closed on Sundays and six legal holidays.

(8) The use of transfer stations is limited to commerical trash collectors and municipal and county vehicles.

(9) Salvage operations are prohibited.

Disposal facilities currently include four disposal stations, ranging in size from 146 acres to 590 acres and totaling approximately 1,134 acres. Remaining capacity of all sites is approximately 60 million cubic yards. All are operated as sanitary landfills utilizing the area-fill method of construction. Typical construction operations are shown in Plates A and B. Refuse is delivered to the

Coyote Canyon
Sanitary Landfill



Olinda Sanitary Landfill

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Unloading
Transfer Trailers

Typical trashfill
dumping face

Typical trashfill
dumping face

Steel wheeled
compactor

Application of
water for dust control

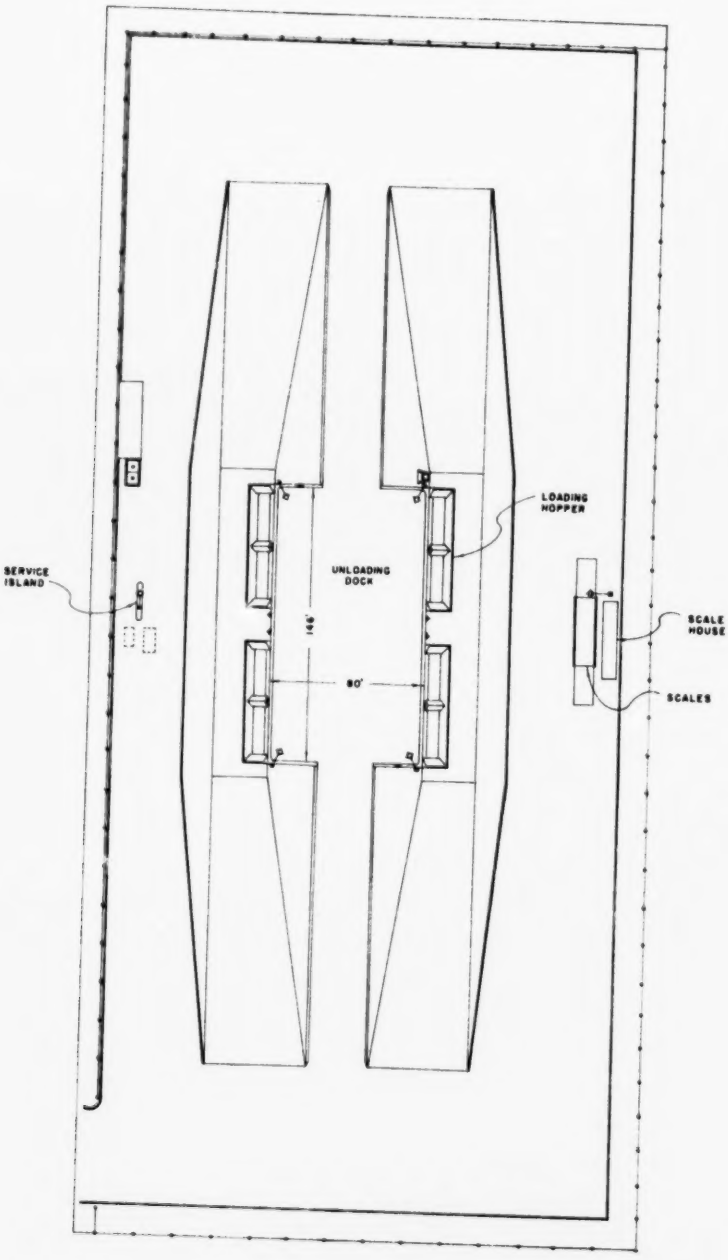
Motor scraper
applying cover material

sites by commercial collectors, the general public, and County operated transfer vehicles. The material is separated into categories of demolition waste, inert waste, and commercial and domestic waste. Each category is deposited at different locations within a fill site. Such segregation of wastes is practiced primarily to facilitate control of traffic and unloading operations. The transfer vehicles are unloaded by means of a tractor pulling wire rope cables placed in the trailers prior to the loading of refuse.

Utilizing the cell type fill and cover operation, refuse is placed in lifts approximately 15 feet in depth. The cells vary in size from 2,500 to 5,000 square feet. The slope of the working face (as well as the finished face) varies from 2:1 to 3:1. Refuse is dumped both at the top of the fill and at the bottom of the working face. Because of the space required to unload, transfer trailers are unloaded on one level and all other traffic on the other. Crawler tractors spread and compact the refuse in both directions on the working face. A minimum earth cover is placed at the end of each work day; each lift receives an earth cover of approximately one foot. A minimum of two feet of cover is placed on all finished surfaces. Self-propelled scrapers are utilized to provide and apply the earth cover. No water is added to the refuse material to aid in the compaction.

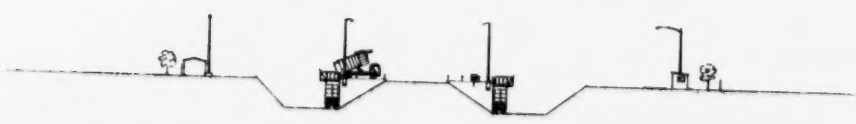
Existing transfer facilities consist of three stations strategically located to best serve the needs of the long-haul areas. Each station consists of basic modules with the number of modules varying to meet the disposal requirements of each individual service area.

The basic module (Plate C), consists of a ground level unloading dock 146 feet long and 80 feet wide with depressed ramps for transfer trailers adjacent to the unloading dock. Each dock has loading space for four sets of transfer trailers; a set consisting of a semi-trailer and pull trailer. The station also has a truck scale for weighing material brought into the station and facilities for fueling the equipment. Typical transfer station equipment consists of truck-tractors, transfer trailers, packer-loaders, and power broom sweepers.



PLAN

TYPICAL TRANSFER STATION



CROSS SECTION

The truck-tractors and trailers are used for transfer of refuse from the station to the disposal sites. The packer-loader is used to distribute and compact refuse in the transfer trailer, and the power broom is used to pick up any refuse which might be scattered during the transfer of the refuse from the collection truck to the transfer trailers. Typical transfer operations are shown in Plates D and E. When loaded, the transfer trailers carry a payload of from 20 to 22 tons. Daily tonnage handled by any one of the stations averages from 500 to 800 tons.

Solid Waste Production

Solid waste production for the County during 1967-1968 was determined to be approximately 1.9 million tons, amounting to approximately 36,500 tons per week. This production on a population basis represents approximately 8.0 pounds per capita per day.

Subsequent analysis of the waste disposed during 1968-1969 showed a waste production of 2.3 million tons, representing a generation factor of approximately 9.1 pounds per capita per day, based on a total population of 1,369,000 for the Study Area.

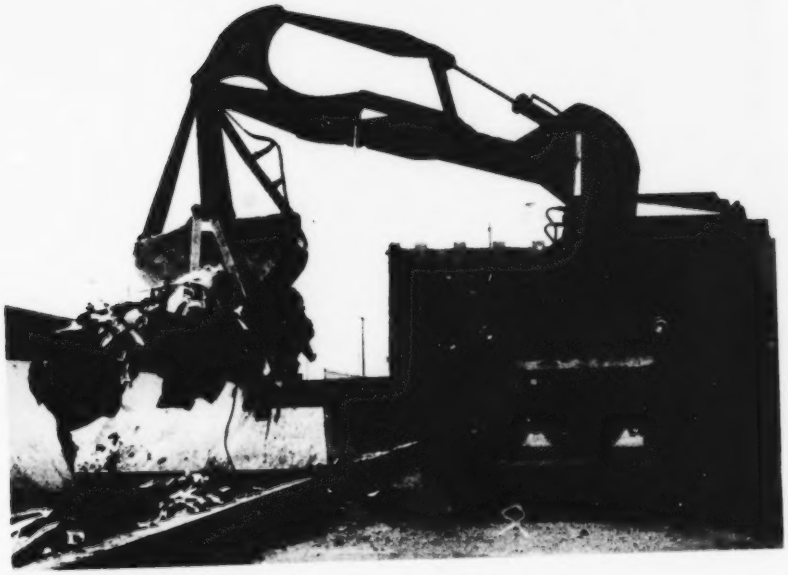
The annual solid waste production is expected to increase from the present 2.3 million tons to 2.5 million tons in 1970; 5.8 million tons in 1990; 8.8 million tons in 1990; and 11.9 million tons in the year 2000. Corresponding values in cubic yards, based on an estimated density of 1,200 pounds per cubic yard, are 4.2 million cubic yards (mcy) in 1970; 9.7 mcy in 1980; 14.7 mcy in 1990; and 19.8 mcy in the year 2000.

Transfer Station No. II

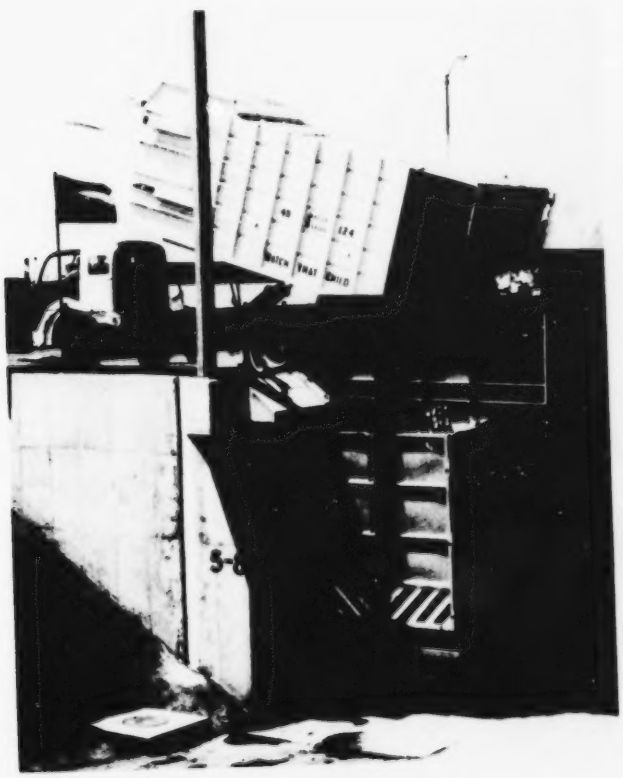
Transfer Station No. II

Transfer truck and trailers

Power sweeper used at the transfer stations



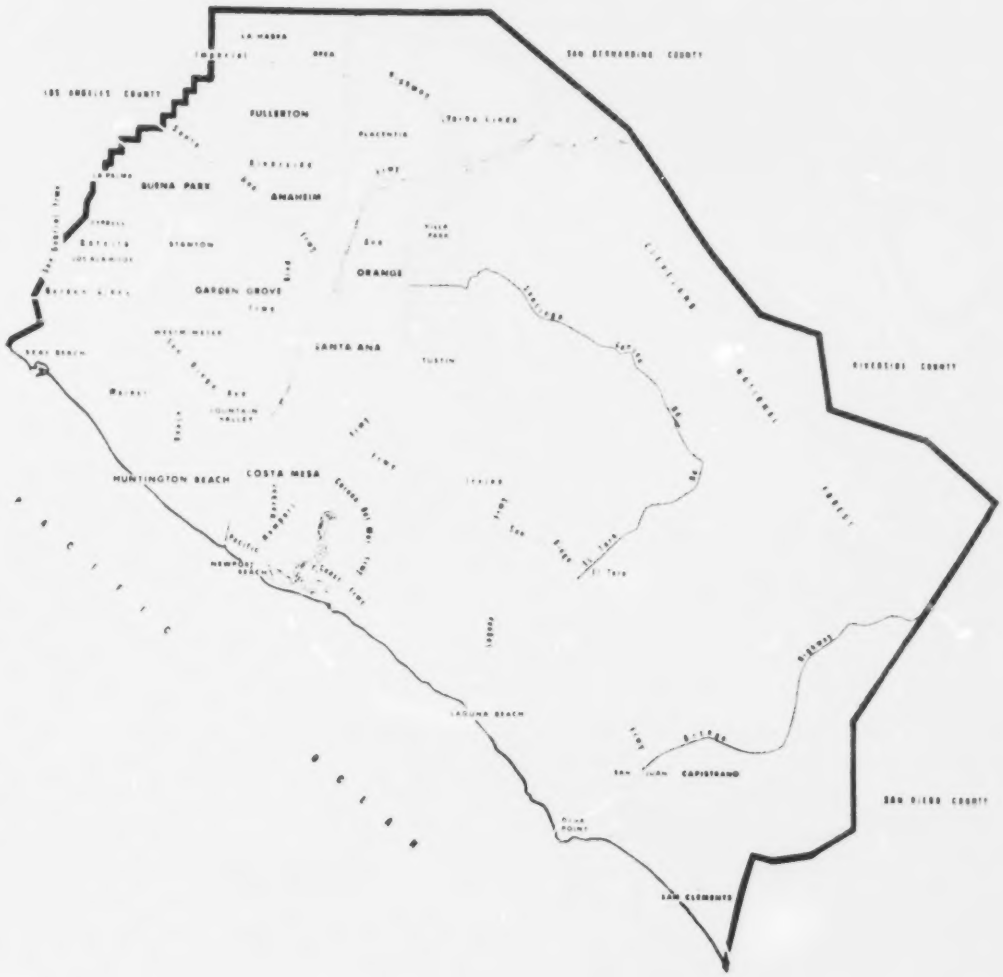
Packer loader
used to distribute and
compact refuse in the
transfer trailers.



Transfer of refuse from collection
vehicle to transfer vehicle

LOCATION REFERENCE MAP OF STUDY AREA

FIGURE II-2



STUDY AREA

ENGINEERING – SCIENCE, INC.

CHAPTER III

STUDY APPROACH

For many years Orange County has conducted a successful Solid Waste Management Program. In 1946, the first step in a regional approach to the management of solid waste was taken by the adoption of an ordinance that established a county-wide (regional) management program, whereby solid waste storage, collection, and transportation was entrusted to the cities, and the County government was vested with the authority and responsibility of establishing and maintaining disposal sites for use by all residents of the County.

This regional concept was further advanced in 1959 with the adoption of a formal County Master Plan of Refuse Disposal (Reference 2) which formulated the present disposal program, based upon the principle of disposal by sanitary landfilling and refuse transfer.

In an effort to further improve the solid waste management program for the County and update the planning activities of administration, this study has been concerned with the establishment of a coordinated interagency planning program to integrate solid waste disposal functions (including preplanning for the beneficial reuse of disposal sites) with the planning functions of all governmental and private agencies.

BASIC PHILOSOPHY

Planning for the disposal of solid waste in the Study Area has historically rested with the County's Refuse Disposal Engineer, under the Road Commissioner and County Surveyor, who is charged with the responsibility of administering the Countys' disposal program. However, carrying out this responsibility, as was to be expected, either impinges or depends on the activities of other government and private agencies, such as health, planning, land use, water, air pollution, and other agencies providing service to the community. Constraints imposed by this dependence on other agencies are increasingly affecting the County's disposal program and establishment of sanitary landfills. This comes not as a result of any planned efforts on behalf of these

various agencies, but rather as a result of a lack of awareness on their part as to the types and magnitudes of problems generated as a result of their actions. This lack of awareness probably exists because sanitary landfill activities are not of primary concern to these other agencies. However, each agency does have an implicit or explicit interest in such activities, particularly in the location, operation, and use of sanitary landfill sites. Therefore, every County agency, be it governmental or private, must be continually involved if optimum community-wide benefits are to occur as a result of sanitary landfill disposal activities.

Efficiency of solid waste management is of major importance, and a unilateral approach to solid waste disposal is inefficient. It must give way to a regional approach, with comprehensive area-wide planning, coordinating, and integrating of development plans, and area-wide involvement.

Today's society is demanding evnironmental improvements, maximum utilization of natural resources, and new planning techniques which will insure full benefits from all endeavors. For this study, a philosophy toward solid waste disposal was adopted that stresses integrated planning instead of single purpose planning, the conservation of land space and the maximum utilization of sanitary landfills, and inter-agency cooperation and coordination in all general development. Such a philosophy is unique to the disposal component of a solid waste management program. Nevertheless, it can be achieved through persistent effort directed toward citizen involvement, intergovernmental participation and cooperation, and coordinated public and private development activities.

STUDY PLANNING GROUPS

With the adoption of such a basic philosophy by project directors, the first step toward its application and the realization of project objectives was to establish two study planning groups: (1) a Technical Advisory Committee (TAC), and (2) an Inter-Agency Planning Committee (IAPC). These groups were formed not only to assist and guide the conduct of the study, but were also intended to serve as the backbone of a new solid waste management program for the County, through intradepartmental and general citizen involvement.

Technical Advisory Committee

The TAC consisted of ten members, seven representing various County governmental departments, and three representing important County organizations not a part of County administration. This committee was formed to serve as an advisory group to the project study, guide and review the work, assist in achieving coordination between various agencies, and gain public assistance, participation, and acceptance. In addition, it was envisioned that the TAC would plan an active role in the administration of the future solid waste management program, particularly in enhancing the concept of integrated, interagency planning.

Inter-Agency Planning Committee

The IAPC was appointed by the Project Director, and was made up of individuals representing a broad spectrum of County agencies including County governmental departments, members of the TAC, State and Federal agencies, other public agencies, and private citizens. The function of the IAPC was to foster the concepts of the study's basic philosophy. Specifically, the committee was formed to (1) formulate and implement a definitive regional planning program for sanitary landfills and reuse through integration of sanitary landfill planning with other public, private, and governmental planning functions and programs, (2) aid in the development of reuse concepts for completed sanitary landfills, (3) aid in the development of new ordinances required for implementation of a regional solid waste management and disposal program, and (4) initiate an effective public relations program.

Pursuant to these functions, three subcommittees were established: a Governmental Planning Subcommittee, a Reuse Concepts Subcommittee, and a Publicity Subcommittee. Through these subcommittees, it was anticipated that the IAPC would be able to function in a more organized manner and attack the overall study problems with objectivity, with as little subjective input as possible.

Subcommittee actions, deliberations, and decisions were to be translated later into definitive "action-plans" applicable to the study for the delineation of a solid waste management program, and an organization capable of implementing and perpetuating the desired goals.

COMMITTEE ACTIONS

As previously discussed, the creation of these committees and sub-committees was for the purpose of addressing the regional solid waste planning problem through the integrated activities of existing agencies within the County. Also, it was hoped to develop a workable operating solution to the regional planning aspects of solid waste disposal utilizing the talents and capabilities of these existing governmental and private organizations. It was envisioned that the IAPC would establish the initial context within which the necessary interactions between the various agencies could take place; then, through committee action, the implicit interests of these agencies in the location and use of sanitary landfill sites would be recognized. Also, it was anticipated that awareness of the need for the involvement of all agencies in the total solid waste management program for the County would be enhanced; and that this awareness would then foster a cooperative effort in a positive fashion toward the solution (or in the promulgation of policies for such solution) of the solid waste environmental problems. In short, the IAPC was to be the group to review and coordinate planning and implementation efforts for integrating solid waste disposal activities with area-wide planning and to maximize utilization of sanitary landfills through such planning. It was to guide and direct the study efforts so that stated objectives could be achieved. It was to be the organization through which developed concepts and integrated planning for solid waste disposal would be perpetuated.

Unfortunately, the mere existence or formation of such a committee does not make it an effective problem-solving group, unless the group is made up of individuals who have come to the realization that they share a common goal which they are actively seeking, each within his own and the group's context. They must be motivated to want to function in such a context, made to feel that the purpose of the group is vital and that the issues are of real concern for the benefit of the whole community, and not just for the single institutions charged with the responsibility of coping with the respective issues, whatever they might be. The IAPC was made up of dedicated individuals, all very civic minded, and fully aware of the environmental changes taking place across the nation and the County.

But, for them, the problems of solid waste did not appear to be of foremost significance with respect to the total ecological problem. Interest was manifested; however, motivation on a group basis was lacking. Consequently, desired group action, policy decisions, and positive action plans were never fully consummated. This is not to imply that no good came from committee actions. On the contrary, a positive solid waste management program for the County of Orange was developed and committee participation contributed to public relations activities, in developing and creating awareness of sanitary landfill reuse concepts, and in the formulation of basic data for a new ordinance to implement the solid waste management program.

In retrospect, however, it was perhaps unrealistic to expect that the IAPC could or would function in the manner and to the degree originally planned. One of the reasons was insufficient time for the committee to develop a truly group context through which the problems could be attacked from a group point of view in preference to an individual basis. Furthermore, insufficient attention was given to the structuring of the committee so that it could function to fully achieve the designed objectives; it was left to the committee itself to provide this structuring. The formation of any committee or group implies a commitment to make it effective, and participants in such groups are usually too immersed in their own problems to foster this effectiveness without planning. Guidance must be provided to bring a group to the stage where it can develop and seek common objectives and commitments without minimizing the individual's contribution.

By means of an innovative and pioneering two-day workshop, a concerted effort was made to provide guidance to assist the participants to appreciate and become aware of the various roles in sanitary landfill planning, operation, and reuse; to provide an understanding of how the individual members could contribute to improving the present procedures and activities; and to enhance their ability to become a functional policy and decision-making group. Although of significant interest to the majority of those attending (with some vocal exceptions), because of the limitations of the insufficient two day duration the workshop proved to be of limited value in the full development of the committee's capabilities to work as a group toward effective goal-oriented decision-making

and problem-solving. As a result, the committee subsequently gravitated to a more typical and conventional role of approving decisions and policies formulated by others, instead of vice versa.

One conclusion that can be drawn from this experience is that the appointment of a committee to foster and develop integrated, interagency planning without one or more effective and technically informed members to provide the spark of leadership and to act as a catalyst, will probably produce less than adequate results. Such integrated, interagency planning would probably more effectively come from those persons directly involved in the day-to-day operations. Committees can help in an advisory capacity, but they cannot be expected to be a panacea.

Even though only partial success through the IAPC has been achieved to date, the basis for a sound integrated, interagency planning program through limited committee participation was nevertheless established, and the future will tell how well the program will work.

Notwithstanding the above described limitations, the efforts of this project have provided at least a new and different perspective to the planners, County department heads, private citizens, developers, and many civic organizations who participated. The basic concept that sanitary landfills can be beneficially reused is difficult for many to fully comprehend. To expect immediate acceptance of such a concept and immediate response to interagency development utilizing sanitary landfills would be unrealistic. Most of the members of the Inter-Agency Planning Committee are vitally involved in general County planning, and the future will demonstrate the effect of their participation in the development of the solid waste program. Time must be allowed for interagency cooperation to develop and grow into a routinely accepted practice. The solid waste management program that has been developed should greatly enhance this desired and necessary interagency action, and, in time (if properly directed) will mature into a natural County-wide planning activity.

PUBLIC SUPPORT

Public apathy to the problems of solid waste management, and particularly disposal, is well recognized by most officials charged with the responsibility of solid waste management. This apathy is usually a result of a lack of awareness, understanding, and appreciation of the overall problems by the general public. One of the greatest problems affecting the implementation and perpetuation of a solid waste management program in most areas of the nation is the public's almost universal ignorance, quite often shared by public officials, of the nature of the problem, the costs involved, and the fundamental concepts of solid waste disposal.

Only the most rudimentary aspects of storage and collection represent the average person's most intimate contact with solid waste. Once refuse has been removed from his premises and sight, it is out of his mind and he is subsequently unconcerned with what happens to the refuse or the problems it creates for responsible agencies. This lack of awareness and apathetic attitude on the part of the general public often result in lack of support for a solid waste management program established to solve and cope with the problems involved. For success, means to develop and sustain local support must be an integral part of the program and public information activities relative to environmental quality improvement must be strengthened if full success is to be achieved.

During the course of this study and through the effort of the Publicity Subcommittee of the IAPC, the story of Orange County's solid waste disposal problems, the need for disposal facilities, and the programs being considered to meet the total solid waste management needs were repeatedly brought to the attention of the public. A color sound film, professionally produced for the County Road Department, showing the present disposal program of the County, and depicting some reuses of sanitary landfills was widely shown to various civic groups, service clubs, governmental departments, private developers, schools, municipal councils, chambers of commerce, and other similar institutions. Concurrently, plans for the solution of the problems and the total program for the management of solid wastes were also discussed. More than

200 showings of the film were presented, and additionally, the film has toured nationwide and has been made available for showing by any public agency throughout the nation.

Extensive activities took place on "Earth Day" to publicize the environmental problems of solid waste. These activities included a picnic-type lunch at one of the County's sanitary landfills, during which tours were conducted showing the operation of the landfill for the press and public.

Thus, public awareness of the "Orange County Story" is improving. Continued awareness will be enhanced through citizen involvement in the solid waste management program developed during this study.

CHAPTER IV

PROPOSED SOLID WASTE MANAGEMENT SYSTEM

A solid waste management system is one which is designed to handle the solid waste of an area so that it does not adversely affect the health, safety, and welfare of the public nor degrade the quality of the environment. The management function of such a system includes the necessary organization to insure successful accomplishment of the mission for which it was created.

MANAGEMENT STRUCTURE

The management function in Orange County, as discussed earlier, historically has been a joint responsibility of incorporated cities, special purposes districts, and the County. The operations function of the system (encompassing storage, collection, transportation, and processing, where applicable) has been the responsibility of municipal or district administration. The disposal and transfer components of the operations function have been the responsibility of the County, which designates and establishes locations within the County to be used as solid waste disposal sites, and promulgates rules and regulations for use and operation. Additionally, the County is responsible for providing waste handling services (collection, transportation, etc.) in those portions of the unincorporated area of the County not receiving such operational services from any other source.

This division of responsibility and coalition of administrative bodies for solid waste management has well served the County, allowing local autonomy on the part of the incorporated cities regarding the manner in which solid waste handling operations are conducted, and allowing the establishment of a regional program for solid waste disposal and transfer. Such a coalition has provided for the optimum utilization of personnel, equipment, and funds by each operating agency in a specific area of responsibility, the varying needs of which are best known by the respective agency. The Inter-Agency Planning Committee was of the opinion that this existing management structure

should be maintained and that the total solid waste management organization be structured around such a quasi-regional context, in preference to a total regional organization.

Thus, the proposed solid waste management organization for Orange County is essentially patterned after the existing general structure, modified to improve means and avenues for active interagency coordination and cooperation, not only for management practices, but also to foster beneficial integrated planning for and reuse of disposal facilities.

The proposed organizational chart for the County's solid waste management system is presented in Figure IV-1, showing total overall responsibility for solid waste management vested in the Board of Supervisors, which is the deliberative and policy decision making body. The Board will adopt those regulations or ordinances necessary to insure that solid waste handling and disposal facilities are located, maintained, and operated so that the total community environment is enhanced and protected.

Advisory Council

At present, however, no legislative mechanism exists whereby rules and regulations or ordinances relative to storage, collection, and transportation of solid waste adopted by County government can be enforced within city boundaries. Thus, an avenue or channel for coordination and cooperation between city and county government is proposed by the establishment of an Advisory Council to review, discuss, advise, and recommend on all matters pertinent to County-wide, regional solid waste management practices. The Council would review all solid waste functions including collection, storage, disposal planning, financing, and ordinances, rules, and regulations enhancing management at all levels of government. The formation of this Council would: (1) help to achieve the desired objective of integrated, interagency participation, and cooperation via a two-way exchange of total management objectives; (2) aid in policy decisions and uniformity of operational practices; and (3) provide a means for communication between local governments, private entrepreneurs, and the County government.

County Structure

County government, in its role in solid waste management, remains the guiding force behind the adopted system. It is probable that future State-developed solid waste program and legislation will look to the County to provide detailed local and/or area-wide solid waste planning and management. Thus the County program must be structured so as to be able to fulfill its role and responsibility to the citizenry.

The primary operational function performed by County government is that of solid waste transfer and disposal. In the past, these functions have been adequately handled by the Road Commissioner and County Surveyor through the County's Refuse Disposal Engineer. It is contemplated that this function would continue to be their responsibility, but also included should be the additional assistance of an adequate staff to aid in the day-to-day operation and to perform the necessary functions of monitoring relative to solid waste quantity and characteristic surveys, research, design, special studies, and short-term planning.

Additionally, line positions for solid waste management in the County organization, reporting to the Board of Supervisors, are proposed to be provided for the County Health Department, General Planning Department, and the Administrative Office. Each of these line positions would provide for a definite functional component of the total solid waste management program. The Health Department, through its Environmental Sanitation Division, would provide the necessary role of enforcement and policing of rules, regulations, and ordinances applicable to all public health aspects of the system. Long-term planning of solid waste disposal needs would be the responsibility of the County General Plan Department, to provide for a complete integration of solid waste planning (particularly disposal and transfer) with total County planning, thus enhancing the total environmental development of the Study Area. Responsibility for County financing of the solid waste disposal program would be placed with the County Administrative Office, through which such financing can be incorporated in the general Planning, Programming, and Budgeting System (PPBS) of the County. This will provide the means

for proper evaluation of the solid waste management system in relation to total County objectives, program priorities, and financial needs, and will assure the coordination of solid waste functions with other County functions and eliminate duplication and mismanagement.

Advisory Committee

As mentioned previously, the principal responsibility of County government in the solid waste management system is disposal and transfer. To aid in these functions, an Advisory Committee is proposed to provide technical assistance, advice, and consultation to the Road Commissioner and County Surveyor on all matters pertaining to the disposal and transfer functions. This committee, made up of other department heads, will fulfill the necessary function and desired objective of providing integrated, interagency coordination and cooperation, and will foster the beneficial, integrated planning for and reuse of disposal facilities and the optimum utilization of transfer facilities. Through the committee's activities and consultation, locations for disposal stations, construction criteria, reuse potentials and concepts, priorities, and continuing evaluation and planning of the disposal program can be integrated with all County plans and programs. Thus, awareness of the needs and requirements for the disposal of solid waste will be evident to all levels of County government.

INTEGRATED PLANNING

Previous sections of this report have emphasized the need for integrated planning of all governmental activities so that the residents of the County will be benefited and the total goals will be achieved. The basic philosophy presented in this study has stressed the need for County-wide, integrated, and interagency coordination in all planning and development efforts; and that planning can no longer be effective if only single-purpose.

For Orange County, in its endeavor to establish such planning as part of the solid waste management program, the logical approach was to incorporate the planning functions for solid waste disposal and related activities with the broader, newly adopted County General Planning

Program. At the inception of this two-year solid waste study, a County-wide general planning program had not been formulated or proposed. Thus, as part of this study, an Inter-Agency Planning Committee was formed to advance and perpetuate the concept of integrated, interagency planning to enhance the whole solid waste management program. During the second year of the study, however, such a general program was adopted by the County; and, although it is still in its formative stage, it represents the ideal vehicle for long-range, continued planning for solid waste management, in which all diciplines of integrated planning will be undertaken.

In many respects, but only on a broader scale, the objective of this study (implementing an interagency planning program to integrate all governmental planning functions) has been fulfilled through the initiation and activities of the General Planning Program. Thus the program, and the department responsible for its activities, has been given a line position in the organizational structure for the County's solid waste management program, subrogating the role of the IAPC, to provide the continued integrated planning necessary for the total environmental development of the area.

Orange County General Planning Program

The General Planning Program (GPP) for the County of Orange is a new approach to regional planning for all facets of the County's environment, including that of solid waste disposal. It places emphasis on citizen involvement, intergovernmental cooperation, and coordination of all public and private development activities. In order to show its relationship to planning for solid wastes disposal and management, a general description of the plan and its goals is presented.

The GPP concentrates on developing a viable comprehensive "planning process," rather than on the preparation of any single master document. Major emphasis of the program is placed on clarifying and coordinating detailed policy throughout all the development-related activities of County government including Human Resource Development, Economic Resource Development, Physical Resource Development, and the necessary governmental and organizational arrangements for support. The goals, policies, and

plans for these activities will be screened through, and integrated with, the County's functional program areas of the Planning, Programing, and Budgeting System (PPBS), recently implemented by the County. These function areas cover a wide spectrum of governmental activities and include: (1) community safety; (2) physical and mental health; (3) education; (4) home and community environment; (5) economic assistance; (6) recreation and cultural activities; (7) transportation; and (8) general administration and support.

The Planning, Programing and Budgeting System (PPBS) employed by the County is a technique for organizing activities and budgets according to the basic program objectives which the activities support. It offers a method of examining and organizing activities which cuts across normal departmental organization. It is a way of allocating resources and deciding, in effect, which activities of government should be pursued and which should be postponed or eliminated. It allows improved visibility of built-in duplications and conflicts of efforts, and provides a basis for improved analysis of program effectiveness, for comparing alternative program emphasis, and for clarifying program priorities.

Very much in line with the objectives of this study, in which an interagency planning program was to be initiated to integrate solid waste disposal functions with the planning functions of all governmental and private agencies, the County General Planning Program (GPP) will assure such integration and coordination for all County functions. The principal elements of the program include:

(1) Broad policy analysis and detailed policy formulation in all functional areas;

(2) Preparation and integration of development plans;

(3) Improved "continuing process" of planning to support decision-making and to build better implementation capability;

(4) Community involvement and intergovernmental coordination; and

(5) Improved organization and techniques for managing the planning activities.

Part and parcel of the GPP is the establishment of four advisory and review groups to aid in policy planning and implementation and coordination of County development programs, much as was envisioned for the IAPC as an original objective of this study. These advisory groups are: (1) Integrated Development Program Team; (2) Interdepartmental Policy Review Committee; (3) County Intergovernmental Policy Planning Council; and (4) Citizens Direction Finding (or Policy Review) Commission.

Integrated Development Program Team

This group will consist of a multi-disciplinary staff composed of individuals with expertise in the fields of economics, engineering, planning, political science, public administration, sociology, statistics, etc. Its work will encompass the collection, analysis, evaluation, and integration of all existing and proposed policies of the County, cities, special districts, and citizens groups; identification and organization of policy areas according to the PPB functions and the four environmental resource areas; analysis of the gross magnitudes of resources needed to achieve the general goals and those presently or potentially available, including human, physical, economic, and organizational; identification of the constraints on the resources and the response capacity of the County; formulation of development policy concepts, with consideration being given to all concept variables, the different program emphases, resource allocations, and generalized cost/benefit analyses of development programs; establishment of general program priorities, emphasizing resource allocation, requirements, and program responsibilities; transmission of policy guidelines to resource development planning and programming; collection, analysis, and integration of resource development plans and programs; and monitoring, revision, or updating of the plans and programs.

Interdepartmental Policy Review Committee

This group will serve as a cabinet of advisors to the County Administrative Officer (CAO) and will be composed of County department heads. The function of this group will be to provide frequent and regular review and critique of all policies, plans, and programs;

facilitate cooperative work and information sharing; and develop formal recommendations for action by the CAO and the Board of Supervisors.

Intergovernmental Policy Planning Council

This group will be made up of an elected official from each local government, major independent agencies, school districts, and other special districts. The formation and activation of such a council will allow a closer tie between all units of government, provide for the ever increasing need for better cooperation and coordination between County government and local government and other agencies, and enhance the understanding of the role that all units of government must play in the overall program. Its purpose will be to provide informed criticism and guidance on policy formulation; ensure that intergovernmental technical cooperation is achieved as necessary; and provide official sanction or approval to policy guides.

Citizens Direction Finding Commission

The purpose of this commission is to insure community involvement in all facets of the planning program to assure that development planning is responsive to actual citizen needs and desires. It will provide a sounding board for the wide variety of nongovernmental citizen groups and organizations, and serve as the collector and central channel for relating the efforts of such organizations to the General Planning Program. The Commission will direct critical inputs to the policy formulation process, and help in defining or identifying problems, general goals, and providing critical evaluation. It will also serve as the coordinating body through which the efforts of special technical committees of different citizen groups can be brought to the attention of the appropriate County planning groups at the right time.

Community involvement in the General Planning Program is vital to the success of the program. The purpose of this involvement is three-fold and can be summarized as follows:

(1) To improve two-way communication; to help government understand problems and goals of the citizenry; to help citizenry understand government's problems, plans, and programs;

(2) To achieve a broad critique and some consensus as to policy clarification and priorities; and

(3) To enlist the energy and capabilities of interested citizens in the actual technical analysis and planning efforts.

From this brief presentation of some of the concepts envisioned for the General Planning Program, the relationship of the program to planning for solid waste management, and that of the disposal program to the basic concepts and goals of this study are reasonably apparent. Through such a planning program the total solid waste management program for the County will be enhanced.

No one particular phase of the General Planning Program deals specifically with solid waste. Within the GPP framework, solid waste planning becomes an integral part of many other programs, including all resource development activities, land use, parks, open space, and urbanization, to name a few. The adoption by the County of the solid waste management and disposal programs, as developed during this study, will officially make these programs elements of the total County planning program, and as significant as any adopted master plan, such as highways, land use, parks, etc. These elements will become policy guides around which all County development programs will be coordinated, and through which total integrated planning and development can be fostered.

The solid waste disposal plan developed in this study projected and presented in detail the County's needs for transfer and disposal facilities and equipment through the year 1990. Disposal sites have been located and a detailed time schedule for the acquisition of proposed sites worked out, based on projected solid waste loadings for the various disposal areas. Such features are all elements of the "master" plan for disposal. To implement any of these features through the GPP, for example a new disposal site, a detailed proposal for the development of the site would be submitted, through appropriate channels, to the County Administrative Officer (CAO). Then, through the CAO various segments of County government affected by the proposal would be put to work coordinating the site acquisition with all governmental

activities (the PPBS for budgeting and other purposes, the GPP Department for County-wide coordination and integration, the Policy Review Committee for general review and interagency integration). Upon final processing through the General Planning Program, the new proposed disposal site would have been reviewed as to need, priority, budget, reuse, construction criteria, public acceptance, land use conformity, transportation features, integrated and/or joint interdepartmental development aspects, and all facets of a truly integrated, coordinated planning system. Maximum benefits to be derived from the construction of the proposed disposal site would thus be assured.

In a similar but reversed order, any development activity proposed by another governmental or private agency would go through the same processes. The solid waste element of the GPP would receive full consideration during the review of the merits and constraints of the proposed activity. Locations of proposed disposal sites would be a matter of record as part of the solid waste element, and these sites would be protected through the GPP processes. Detailed planning for the utilization of such sites would result, and single-purpose planning and solid waste disposal on a day-to-day basis would be outmoded.

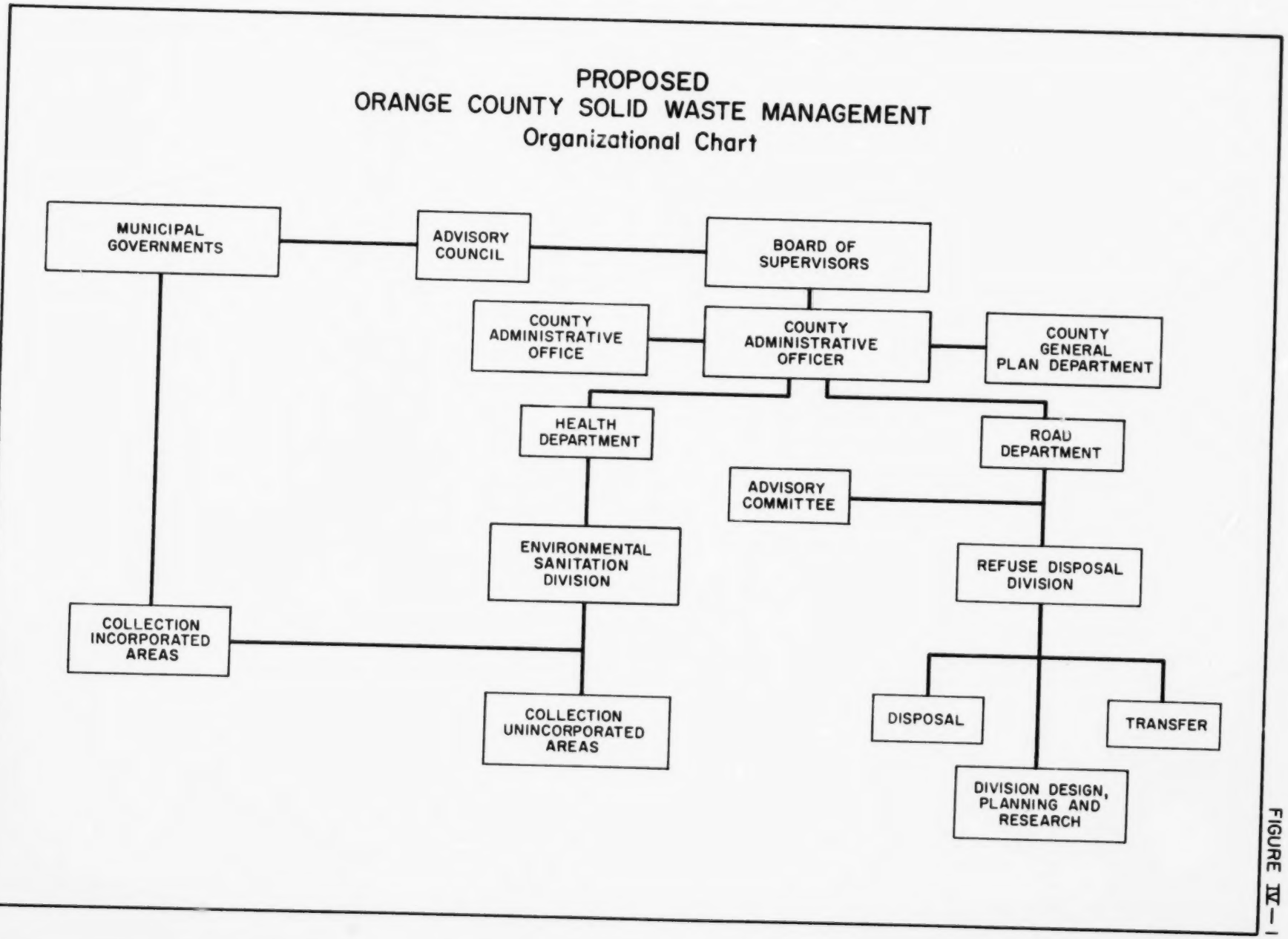

PROPOSED
ORANGE COUNTY SOLID WASTE MANAGEMENT
Organizational Chart
MUNICIPAL GOVERNMENTS
ADVISORY COUNCIL
BOARD OF SUPERVISORS
COUNTY ADMINISTRATIVE OFFICE
COUNTY ADMINISTRATIVE OFFICER
COUNTY GENERAL PLAN DEPARTMENT
HEALTH DEPARTMENT
ROAD DEPARTMENT
ADVISORY COMMITTEE
ENVIRONMENTAL SANITATION DIVISION
REFUSE DISPOSAL DIVISION
COLLECTION INCORPORATED AREAS
COLLECTION UNINCORPORATED AREAS
DISPOSAL
TRANSFER
DIVISION DESIGN, PLANNING AND RESEARCH

FIGURE IX-1

CHAPTER V

CONCEPTS FOR REUSE OF SANITARY LANDFILLS

Literature abounds with detailed reports on studies and investigations of sanitary landfills, their operation, reuse, and the potential dangers involved in such reuse. A review of the multitude of such factual material reveals one basic conclusion; that under appropriate circumstances, technology in construction and operation of sanitary landfills has advanced to a stage where completed landfills can become a valuable asset to a community, with decreasing limitations on the type of reuse to which a sanitary landfill can be put upon completion.

In many areas across the nation, sanitary landfill operations have been carried out successfully in existing or developing suburban and urban areas with no adverse effects on land or property values. This can only be accomplished, however, under the most stringent control of operational factors which would degrade the environment, such as the generation of smoke, dust, odor, pests, and conditions offensive to aesthetic values. Careful, detailed planning of all operational features is a prerequisite, and only through the implementation of such plans can the traditional incompatibility between landfills and planned use of adjacent land be overcome.

REUSE PLANNING

All too often, planning for the reuse of a sanitary landfill comes "after-the-fact." Stringent control measures may be undertaken during construction to eliminate environmental problems and create an aura of acceptability, but lack of planning for the reuse of the landfill when completed and its resulting incompatibility with the planned use of adjacent land often creates something of little or no value, and results in planning "around" the landfill, instead of an "integrated" plan. The land use needs of the area, and how a sanitary landfill can enhance such use, must be considered at the site selection stage. Only through such planning for reuse can construction techniques be employed which will allow the landfill to be reused for a specific purpose.

Techniques and construction equipment are now available to provide the means for developing a landfill for almost any purpose. With adequate compaction of deposited material, pregrinding of wastes, segregation of materials, or other pretreatment processes, landfills can be constructed to be structurally suitable for light construction purposes; and settlement of the fill can be minimized for earlier reuse, and greater contouring of the finished surface of the fill can be accomplished to provide later development of parks, golf courses, and landscaping. Economic analyses must be made to determine the cost/benefit ratio of selected uses and the required construction procedures to the anticipated costs of such construction procedures to accomplish those uses. The costs may not justify reuse, but the fact remains that detailed reuse analyses must be made prior to construction to be able to fully benfit from a sanitary landfill program.

STUDY APPROACH TO REUSE CONCEPTS

One of the goals desired of this study by the County of Orange was to develop a disposal program which would integrate site selection and operational control with planned land use to achieve the maximum beneficial reuse of completed landfill sites. Thus, it was anticipated that the landfill construction program would be incorporated with programs of other agencies for maximizing efficiency of use and reuse of both publicly and privately owned lands.

It was envisioned that through a cooperative effort between various agencies and the County's solid waste disposal division, costs of sites could be shared, and trade-offs be made with respect to disposal of solid waste and creation of a beneficial reuse by the cooperating agency. It was hoped that the various County agencies, private developers, and other County departments (once they were familiar with sanitary landfill construction techniques, the potential value for reuse of disposal sites, and the construction criteria necessary for various kinds of reuse) would perceive applications of the disposal program and completed sites within their own activities (school construction, highway construction, industrial park development, commercial development, parks, golf courses, etc); and that this would result in willing cooperation and

voluntary reuse concepts which could be incorporated in their plans. These reuse ideas would then be evaluated and practical concepts selected that would be incorporated into the County's disposal program.

A reuse subcommittee of the IAPC was formed to develop reuse concepts and ideas as a guide for other agencies, and to later pass judgment on the practicality of those concepts which seemed most feasible as offered by the various agencies and departments. Letters were prepared, enclosing the reuse concepts generated by the committee, and sent to every civic organization in the County, to all County departments, cities, State agencies, Federal agencies, school districts, and private developers. It was requested that the recipients review the reuse concepts as presented and/or offer other concepts which they felt could be incorporated in the overall disposal program or could be used in their planning and development programs. Personal contacts and meetings with various development companies and agencies were held to discuss the County's disposal program and to solicit their cooperation and the integration of the landfilling program with their activities. It should be pointed out that during the compilation of these reuse concepts, no effort was made to prejudge the practicability, feasibility, or applicability of the uses or how they could be integrated into the planning programs within Orange County. This was to be done after response from the community. Following is a list compiled by the subcommittee of areas of development where reuse of sanitary landfills could be of benefit:

(A) Recreation

(1) Parks

(a) Local

Developed (installed facilities - ball diamonds, swings, etc.)

Mechanical Model areas (airplanes, etc.)

Greenbelt Areas

Forest Areas

(b) Regional (larger than 55 acres)

Developed (installed facilities - as local above)

Greenbelt Areas

Camping Facilities

Motorcycle Trails
Wilderness
(c) Roadside Facilities
(d) Community

(2) Playgrounds
(a) Pervious Surface (used for most sport and amusement activities)
(b) Impervious Surface (used for most sport and amusement activities)

(3) Athletic Fields and Stadiums
(a) School Grounds
(b) Outdoor Convention Centers
(c) Little League Baseball
(d) Football Field

(4) Golf Courses and Driving Ranges

(5) Shooting Ranges
(a) Target Ranges for Law Enforcement Agencies and Public
(b) Skeet and Trap Shooting
(c) Archery and Field Ranges

(6) Marina and Harbor Facilities and Beaches
(a) Groins
(b) Jetties
(c) Islands and Peninsulas
(d) Reclaimed Land
(e) Parking Facilities

(7) Downhill Sports
(a) Ski Runs
(b) Toboggan and Sled Runs
(c) Soap Box Derby Course

(8) Equestrian and Hiking
(a) Trails
(b) Rest Stops
(c) Corrals

(9) Zoos and Botanical Gardens

(10) Hunting and Fishing
(a) Artificial Shoals
(b) Hunting Preserves
(c) Areas for Propagation of Game, Fish and Fowl

(11) Race Courses (Pervious and Impervious)
(a) Go-Carts
(b) Motorcycles
(c) Dune Buggies
(d) Autos
(e) Horses
(f) Dogs

(12) Aquatic Sports
(Artificial bodies of water for water sport purposes)

(13) Amusement Centers
(a) Extensive Development (Disneyland)
(b) Moderate Development (Knott's Berry Farm, Beach Front Areas with Roller Coaster, etc.)
(c) Live Animal Center (Safari Land)
(d) Amphitheater

(B) Industrial

(1) Buildings
(2) Storage (Solids and Liquids)
(3) Parking
(4) Access Streets
(5) Aesthetics and Landscaping

(C) Commercial

(1) Trailer Parks
(2) Shopping Centers
(3) Nurseries and Greenhouses
(4) Drive-In Theatres
(5) Structures
(6) Cemetaries
(7) Storage
(8) Parking
(9) Access Streets
(10) Aesthetics and Landscaping

(D) Residential

(1) Conventional Housing
(2) Prefab Housing Units
(3) Mobile Homes
(4) Access Streets
(5) Parking
(6) Aesthetics and Landscaping
(7) Private Open Spaces
(8) High-Rise Structures

(E) Conservation

(1) Flood Control Dikes
(2) Land Reclamation
(3) Greenbelts
(4) Forest Preserves
(5) Tree Farms
(6) Wildlife Sanctuaries
(7) Erosion Control
(8) Small Dam Construction
(9) Water Conservation
(10) Flood Control Debris Basins

(F) Agriculture

(1) Livestock Corrals
(2) Crops
    (a) Irrigated
    (b) Nonirrigated
(3) Pastures
(4) Orchards
(5) Dairies and Feedlots
(6) Range Land
(7) Poultry Ranches
(8) Hydroponic Farming
(9) Buildings Incidental to all Preceding Uses

(10) Storage
(11) Access Streets
(12) Parking

(G) Governmental Facilities

(1) Structures
  (a) Public Safety
  (b) Civil Defense
  (c) Municipal Service
  (d) Prison Facilities
  (e) Animal Shelter
(2) Corporation Yards
(3) Treatment Plants
(4) Public Cultural Facilities
  (a) Bandstands
  (b) Outdoor Art Galleries
(5) Storage
(6) Snow Dumps
(7) Power Distribution and Transmission
(8) Parking
(9) Access Streets
(10) Aesthetics and Landscaping

(H) Institutional
(Structure and Open Space Use Can be Adopted to All)

(1) Educational (Preschool through College)
(2) Churches
(3) Fraternal Orders
(4) Penal
(5) Hospital
(6) Honor Farms
(7) Camps (B.S.A., G.S.A., etc.)
(8) Parking
(9) Access Streets
(10) Aesthetics and Landscaping

(I) Transportation

(1) Vehicle Storage
(2) Parking Lots
(3) Terminal Yards
(4) Stations (Bus, Railroad, etc.)
(5) Airports and Heliports
(6) Highways and Highway Interchanges
(7) Maintenance Facilities
(8) Roadside Rests
(9) Docks, Jetties, Moles and Piers
(10) Harbors
(11) Airport Clear Zones
(12) Refill Construction Borrow Pits
(13) Aesthetics and Landscaping

(J) Military Facilities

(1) Gunnery Ranges
(2) Test and Training Sites

(3) Storage and Isolation Areas
(4) Troop Camps
(5) See Other Categories

(K) Berms and Dikes

(1) Safety
  (a) Flood Control
  (b) Isolation
  (c) Military Revetments
(2) Construction
  (a) Reservoirs
  (b) Retaining Walls
  (c) Dams
(3) Aesthetic
  (a) Screening
  (b) Landscaping

It is obviously apparent that all the above reuse concepts may not be practical, particularly for Orange County, and certain restraints by regulatory agencies on the construction of sanitary landfills could preclude the use of fills for some of the concepts. However, the concepts presented reasonably cover the possibilities.

In the study for Orange County, major emphasis was placed on large sites for long-range planning, where economy of operation would represent a major factor. However, local disposal of small quantities of refuse for neighborhood parks, greenbelts, parking lots, and other similar uses should not be overlooked if the benefit to the community will offset the loss of efficiency and the costs resulting from small site operation. Orange County communities, in the past, have gained great benefit from small County operations, with many completed sites being utilized for little league baseball parks, city parks, trailer parks, and public golf courses.

STUDY RESULTS

The previous section outlined the approach taken toward fostering the beneficial reuse of sanitary landfills and the attempts made in fulfilling this objective; however, this particular aspect of the study did not materialize and develop as hoped. Response to the efforts to interest other agencies in an integrated, cooperative endeavor was essentially negative. In retrospect, this could have been expected,

for such a new approach for maximizing utilization of sanitary landfills cannot be expected to evolve overnight. Regional, integrated planning of area-wide development (in Orange County's case through the General Planning Program) must first evolve before complete integration of landfill construction programs with the development plans of other agencies can be fully realized. Such evolution and attending inter-agency cooperation and participation will take time, patience, and persistent pursuit by all governmental entities and private entrepreneurs. Notwithstanding this, however, it is important to note that the County's solid waste disposal plan will become an element of the County General Planning Program, as discussed in another chapter. Potential disposal sites have been selected and located, and their reuse and development will be considered, evaluated, and integrated with total land use planning so as to benefit the whole of the County through the General Planning Program. Through the efforts of this study, the basic philosophy of preplanning for the ultimate reuse of disposal sites now is apparent to concerned persons, and the benefit derived from such philosophy will enhance the total solid waste disposal plan for the County.

POTENTIAL REUSE CONCEPTS

During the progress of this study, a conscientious effort to initiate the program and develop beneficial reuse of completed sanitary landfills has resulted in some positive initial negotiations and discussions concerning potential reuse of some of the proposed sites, as well as the existing sites. One such reuse concept presently being pursued for an existing disposal station and adjacent proposed site is the development of a general airpark facility for instructional/recreational flying. This scheme contemplates that excavated areas of these canyon-type fills (top of ridges) would be utilized for buildings and hangar facilities, while a portion of the refuse fill area would be utilized for runway and taxi strips. Generally, construction criteria for such a facility are far less critical than for other airports, placing such a reuse within the range of possibility. Initial feasibility studies are underway for the integration of landfill construction with the required needs for the airpark.

Reuse concepts for other disposal sites, both proposed and existing, are being formulated and investigated in cooperation with other agencies. These concepts include such uses as local parks and athletic fields, golf driving ranges, archery ranges, an amusement center, botanic gardens, and large regional parks with all related facilities.

CONSTRAINTS TO REUSE

Any discussion of the reuse of sanitary landfills must be accompanied by a discussion of the parameters which would constrain reuse. It is not within the scope of this study to present a detailed dissertation on such parameters, but caution must be taken in the reuse of any landfill, and preparatory action taken to obviate these potential constraints. The two most important constraints to the reuse of sanitary landfills are gases (from decomposition) and settlement.

Gases

The decomposition of wastes within a landfill result in the production of gases, principally methane, carbon dioxide, nitrogen, hydrogen, and in some cases hydrogen sulfide. Methane gas causes the most concern because of its explosive character. The control of these gases through various means is possible; but precautions must be taken to prevent the migration of these gases, particularly methane, into any facilities, above or below ground, and any buildings constructed on or adjacent to the landfills. Potential hazards from these gases can be eliminated with proper construction and gas disposal systems; but cognizance of such constraint to reuse must be taken.

Settlement

Settlement, or subsidence, of the surfaces of sanitary landfills must also be taken into consideration in the reuse of a landfill. Settlement of a landfill is dependent on many factors: depth of fill, composition, compaction of the material, and moisture content. Many of these factors can be controlled during construction of the landfill, and a preplanned reuse of the fill will enable construction of the fill so as to minimize the settlement as desired for such reuse. However,

final reuse of the fill should not take place until initial settlement has occurred, and any subsequent settlement must be planned for in the construction of facilities in or on the fill surface. Many construction techniques can be taken to obviate settlement problems, and such precautions must be taken because some settlement of a landfill surface is inevitable.

Numerous studies have been made regarding both landfill generated gas and potential settlement problems. One of the most extensive of these studies is that performed under a grant from the Bureau of Solid Waste Management entitled "Development of Construction and Use Criteria for Sanitary Landfills" (References 3 and 4). These reports are recommended reading for any community contemplating the reuse of sanitary landfills.

CHAPTER VI

SOLID WASTE MANAGEMENT ORDINANCE

The success of any solid waste management program depends upon the development and application of adequate laws, ordinances, and/or regulations. These provide the guidance and authority for all management functions of the solid waste program. Without adequate regulations, the line of responsibility is unclear, and the area suffers from the lack of clear guidelines and from the resulting poor service.

The enactment of ordinances by local government must be based on constitutional and legislative authority. They must not infringe upon the rights of individuals and their activities, nor can they act outside the scope of legislative authority granted by the state or federal government. In the field of solid waste management, however, dealing with many aspects of public health, government responsibility and authority under proper exercise of its police power is recognized as being broad, as long as such authority is related to government's established duty of protecting public health. Thus, legislation for the control of solid waste must bear reasonable relationship to the public health of the citizenry and must not be discriminatory.

Many existing state laws relative to solid waste are generally enabling in nature, meaning that local governments are allowed, but not required, to enact ordinances and regulations for the handling of solid waste for the protection of public health. Ordinances adopted under such permissive authority have been (in many areas) crisis oriented and developed only to eliminate a given problem when it becomes a nuisance and complaints arise concerning said problem. Little legislation exists which deals specifically with solid waste management in a regulatory manner, requiring specific minimum rules and regulations, and standards to be followed for environmental protection, or requiring that solid waste be managed in such a manner as to prevent health hazards, nuisances, and pollution.

Existing County ordinances are for the most part implementing in nature, deriving their authority from enabling State legislation. Such

ordinances deal to some extent with refuse disposal, land use permits, prohibition of open burning, and industrial waste disposal.

Conspicuously absent from these ordinances, however, are regulations pertaining to storage, collection, collection equipment; the conveyance and transportation of solid waste upon or along public highways and streets; and definitive regulatory or enforcement authority, except regarding industrial wastes. Municipal ordinances may or may not include regulations regarding these items, but the need for their adequate regulation and control is essential.

PROPOSED ORDINANCE

To implement some of the features that have been discussed previously and to give legal authority to the proposed solid waste management program and organization that has been outlined, a new ordinance for Orange County is proposed which also could serve as a guide to others who are faced with problems similar to those in Orange County.

The ordinance for the solid waste management program in the County of Orange was written to provide for the general features of the program as were developed during the course of this study and to consolidate existing ordinances relative to solid wastes. It formalized the organizational structure for the County's solid waste management system, without being too restrictive, in order to provide latitude for the various responsible agencies in performing their duties in the management program. Local municipalities were assigned the responsibilities of collecting, of adopting rules and regulations for proper solid waste handling, and of regulating private solid waste operators via contracts or franchises. Transportation of solid waste on public highways was regulated, as were undesirable disposal practices, scavenging, operation of disposal sites, and enforcement. Formulation, implementation, and perpetuation of a solid waste disposal plan were stipulated; and advisory groups were created to provide interagency participation, coordination, and cooperation. Finally, procedures for integrated disposal financing and long-range planning were established.

Solid Waste Management Ordinance

The Board of Supervisors of the County of Orange, State of California, do ordain as follows:

Section 1: Title - This ordinance shall be known and may be cited as the Orange County Solid Waste Management Ordinance.

Section 2: Findings and Purposes - It is determined and ordained that it is necessary to establish a County directed program of solid waste management, including storage, collection, transportation, processing, and disposal, providing for the coordination and integration of the solid waste management activities of the various county departments, cities of the county, special districts, and any person engaged in solid waste activities, in order to protect the health, safety, and welfare of the public and to prevent the degradation of the environment.

It is further declared that inadequate and unilateral planning for solid waste management is uneconomical and not in the best interest of the people of the County and that an interagency, coordinated planning program for the management and handling of solid wastes is necessary, particularly concerning the planning for disposal site acquisition and the ultimate reuse of completed sites, integrated with other County land use planning programs.

It is the purpose of this ordinance, to effectuate the findings, to:

(1) Establish a County-wide regional solid waste management program and to assign responsibilities for the administration of such a program;

(2) Establish and maintain a cooperative integrated program of planning as part of the County General Planning Program and the Planning-Programming-Budgeting System (PPBS);

(3) Establish rules and regulations for the collection, transportation, and disposal of solid wastes;

(4) Create an advisory council and delineate duties and responsibilities of said council;

(5) Create a technical advisory committee and delineate duties and responsibilities of said committee;

(6) Establish procedural methods for the establishment of disposal facilities; and

(7) Establish provisions for compliance to the provisions of this ordinance and any related ordinances previously adopted, and establish penalties for any violation.

Section 3: Definitions - As used in this ordinance, unless the context indicates otherwise:

(1) "Board" means Board of Supervisors, County of Orange, California.

(2) "City" means every incorporated city or municipality.

(3) "Collector" shall mean any person who operates a service for the collection and transportation of solid wastes from residential, commercial, institutional, or industrial premises.

(4) "Committee" means the solid waste disposal Advisory Committee.

(5) "Container" means receptacles for solid waste storage.

(6) "County" means County of Orange, California.

(7) "County Department" means any department of the County of Orange.

(8) "Council" means the solid waste management Advisory Council.

(9) "Department" means the County Road Department.

(10) "Director" means the Road Commissioner and County Surveyor.

(11) "Disposal Station" means a facility established, maintained, and operated by the County of Orange for the disposal of solid waste.

(12) "Disposal Facilities" means any combination of solid waste handling installations, including, but not limited to, disposal stations and transfer stations.

(13) "District" means any special purpose district established under state authorization empowered to perform solid waste management functions.

(14) "Garbage" means all animal, fish, fowl, fruit, vegetable, and other matter resulting from the preparation, consumption, storing, processing, manufacturing, or distribution of food.

(15) "Hazardous Wastes" means solid or liquid wastes with certain inherent dangers, including but not limited to toxic wastes, chemicals, explosives, pathological wastes, and radioactive wastes.

(16) "Health Officer" means the Director of the Orange County Health Department or his duly authorized representative.

(17) "Highway" shall mean any street, road, alley, highway, or thoroughfare.

(18) "Industrial Waste" means any and all liquid or solid waste substance, not sewage, from any producing, manufacturing, or processing operation of whatever nature.

(19) "Liquid Waste" means any waste, or combinations of wastes, which is free-flowing.

(20) "Permit Area" means those portions of the County designated on certain maps entitled "Refuse Collection Permit Areas of Orange County" including all amendments and changes thereto, which maps are incorporated herein by reference and are on file in the Department and in the office of the Clerk to the Board of Supervisors.

(21) "Permit Holder" means any Refuse Collector or Refuse Transporter who has been granted a permit by the Board to engage in the collection, transportation and/or disposal of garbage and/or rubbish in a specific permit area in the unincorporated area of the County.

(22) "Person" means any individual, firm, copartnership, joint venture, association, social club, fraternal organization, corporation, estate, trust, receiver, syndicate, municipality, district or other political subdivision or any group or combination acting as a unit.

(23) "Planning Director" means the Director of the Orange County Planning Department.

(24) "Refuse" means both garbage and rubbish and is all inclusive.

(25) "Refuse Collector" means any person or persons, firm, copartnership, joint venture, association or corporation engaged in the collection and disposal of garbage and/or rubbish in the unincorporated portions of the County.

(26) "Refuse Transporter" means any person, firm, or corporation who transports refuse from a central collection point to a commercial garbage feeding hog ranch, processor, or disposal facility.

(27) "Residential Garbage" means garbage as previously defined from residential sources only; i.e., homes, apartments and other dwellings.

(28) "Rubbish" means all nonputrescible wastes including but not limited to, paper, cardboard, grass, tree or shrub trimmings, rugs, straw, clothing, wood or wood products, crockery, glass, rubber, metal, plastic, construction waste and debris and other similar materials.

(29) "Solid Wastes" means all putrescible and nonputrescible solid or semisolid wastes including semiliquid or wet wastes with insufficient moisture and other liquid contents to be free flowing, garbage, rubbish, ashes, demolition and construction wastes, and other useless, unwanted, or discarded materials resulting from domestic, institutional, commercial, industrial, agricultural, and community operations and activities, but does not include solids or dissolved materials in domestic sewage or other significant pollutants in water resources.

(30) "Solid Waste Handling" includes the storage, collection, transportation, treatment, utilization, processing, and disposal of solid wastes.

(31) "Solid Waste Management System" means the entire process of storage, collection, transportation, processing, and disposal of solid wastes.

(32) "Transfer Station" means a supplemental transportation facility used as an adjunct to refuse collection vehicles.

(33) "Truck" means any truck, trailer, semitrailer, conveyance or vehicle used or intended to be used for the purpose of collecting refuse or to haul or transport refuse upon public highways.

Section 4: Solid Waste Storage and Removal - Solid waste storage and removal in the unincorporated areas of the County shall be as follows:

(1) Solid Wastes Storage:

(a) Garbage. Every person occupying or having charge or control of any premises in the County, in or on which any garbage may or does accumulate or exist, shall place and keep all such garbage upon said premises in a covered, watertight, metal or other impervious container, which shall meet the approval of the Orange County Health Department. Such containers shall be kept in a sanitary condition and in good repair at all times.

(b) Combustible Rubbish. All such rubbish, which may or does accumulate on any premises in the County shall be kept in metal containers or containers constructed of a non-combustible material.

(c) Noncombustible Rubbish. All such rubbish, which may or does accumulate on any premises in the County, shall be placed and kept in boxes, metal containers or other suitable receptacles which will contain the material.

(d) Mixed Garbage and Rubbish. Garbage and rubbish may be stored in the same container, which shall be of the type prescribed for garbage containers.

(e) Irrespective of kind, the weight of containers, including contents, at time of collection shall not exceed fifty (50) pounds. The container shall have a capacity of not more than forty (40) gallons.

(f) Yard and tree trimmings shall be tied in bundles not greater than six (6) feet long, two (2) feet in diameter and weighing not more than fifty (50) pounds.

(2) Solid Waste Removal:

(a) Refuse created, produced, or accumulated in or about an apartment house, a dwelling house, or other place of human habitation shall be removed from the premises at least once each week.

(b) Refuse containing significant amounts of garbage created, produced or accumulated at motels, hotels, restaurants, boarding houses or other like business establishments shall be removed from the premises at least twice each week. All other refuse shall be removed from the premises at least once each week. If conditions warrant, the Health Officer may require a greater number of removals per week.

(c) It is unlawful for the person having control or possession of the premises described in the preceding subsections to fail or neglect to provide for the removal of refuse. Each day's violation of this section shall be treated and considered as a separate and distinct offense.

(d) Residential refuse containers shall be placed adjacent to the public highway, or curb thereon, not earlier than twenty-four (24) hours before collection is scheduled and removed therefrom not later than twenty-four (24) hours after collection.

Section 5: Solid Waste Collection and Transportation:

(1) Retained unto the cities, and special service districts of the county is the power and responsibility of providing for the collection and transportation of solid wastes generated within their corporate or district boundaries pursuant to the provisions of applicable sections of State Health and Safety Code.

(2) In order to enhance the solid waste management program of the county, each city, and district engaged in the collection and transportation of solid wastes, is urged to adopt a uniform set of rules, regulations and ordinances governing solid waste handling, except disposal, as necessary to assure that such handling is performed uniformly and operated in a manner as to protect the public health and avoid the creation of public nuisances.

(3) The collection and/or transportation of refuse in the unincorporated portions of the County shall be performed by persons possessing a permit to do so. Permits shall be issued by the Board, based upon recommendations of the Director.

(4) The collection and/or transportation provisions of this Ordinance shall not apply to persons hauling refuse from their own residence; nor to farm or agricultural operation; nor to municipalities or public agencies; nor industrial, commercial

and business enterprises; nor to building contractors; nor any of those hauling their own refuse or refuse generated by themselves; nor to an exclusive County franchised refuse collector performing pursuant to a valid franchise agreement.

Existing exclusive franchise agreements shall be terminated in accordance with the specific franchise agreement. Upon termination, the franchised area will be formed into a permit area or areas. An existing franchise area may be converted to a permit area, or areas, prior to the established franchise agreement termination date if the franchise holder and the County mutually agree to the change. The area, or areas, so converted shall be designated on the "Refuse Collection Permit Areas in Orange County" maps.

Upon termination of an exclusive franchise, either at the established time or a mutually agreeable earlier date, the franchise holder shall, upon application and payment of the appropriate fees and providing the Director so recommends, be issued a permit to provide service in that portion of the area, or areas, as recommended by the Director.

(5) The unincorporated portions of the County shall be divided into "Permit Areas" for the purpose of refuse collection and/or transportation and they shall be constituted as follows:

(a) Permit areas are designated on maps entitled "Refuse Collection Permit Areas in Orange County." Such maps are incorporated herein by reference and are on file in the Department and in the office of the Clerk to the Board of Supervisors.

(b) Except as otherwise provided herein, it shall be unlawful for any person, other than the assigned permit holder, to operate a refuse collection and/or transportation service within the unincorporated area.

The Board shall specify in all refuse collection or transportation service permits the area, or areas, within which the permit holder may collect and/or transport refuse within the unincorporated area of the County of Orange, and no permit holder shall at any time collect and/or transport refuse in the unincorporated area of the County outside the territorial limits set in the permit issued to him, except as provided herein.

The permit areas as designated may be modified by the Director at any time should he find that modification is necessary for the efficient conduct and operation of refuse collection and/or transportation in the areas involved. In the event of such action the permittees in each area shall be given a sixty (60) day written notice thereof before such modification is effected.

(c) A minimum of two permits shall be issued in each area.

(d) No vehicle shall be used in the collection and/or transportation of refuse in the unincorporated area of the County unless it bears a valid permit identification.

(6) Permittee's charges for services shall be approved by the Board of Supervisors. The charges shall be nondiscriminatory and uniform for equal services rendered. All residential rates within an area will be identical. Charges shall be based upon the number of containers, type of refuse, number of separate pickup points at place of collections, placement of containers, distance of carry-out, frequency of collection, location, geographical terrain, and whether a commercial, industrial, or residential collection. An inclusive rate schedule will be filed with the Department by each permit holder as a condition of application for permit, or a renewal thereof. Application for rate changes shall be made, in writing, to the Director. Changes in rates will be authorized by the Board after investigation and recommendation by the Director.

The Department may, if deemed necessary, require a permit holder to provide a verified current operating expense report so as to be able to ascertain if fees charged subscribers are reasonable, nondiscriminating, and uniform for equal service.

Complaints of discrimination and/or overcharging by a customer shall be submitted, in writing, to the Department, and they will conduct an investigation. Unless a satisfactory settlement of the complaint is effected, the Board of Supervisors may be requested to hold a hearing and render a decision on the matter.

(7) Permit holder shall, when deemed essential to the public health and safety by the Health Officer, and directed by the Director, provide collection service to any resident or to any commercial or industrial establishment located within the permit area, desiring such collection service.

The Director may require the collector to provide service to an adjacent permit area when necessary to insure that an adequate collection service is provided the public.

A permit holder may deny service to a subscriber for reason of failure to pay his just bill or for any substantial refusal to comply with the requirements of this Code, after giving the subscriber ample opportunity to comply. The Department shall be notified in writing of any service denial seven days prior to notification to the subscriber.

(8) Permits shall be issued by the Board upon recommendation of the Director. Applications for a refuse collection or transportation permit, or permit renewal, shall be submitted to the

Director on a form provided by the Department and shall include, but not be limited to, the following information:

(a) Name and description of the applicant;

(b) Permanent home and business address;

(c) Trade and firm name;

(d) If a joint venture or a partnership or limited partnership, the names of all partners; of corporation, the name of the officers, and their percentage of participation and their permanent addresses;

(e) A statement that the applicant has arranged for the disposal of all refuse collected or transported by him to a legally established disposal area or business establishment where the same may be legally accepted and disposed;

(f) Facts showing that the applicant is qualified financially and has the previous experience to render an efficient refuse service;

(g) The applicant shall state the number of customers that he proposes to serve;

(h) The applicant shall prove that he owns or has under his control, in good condition, sufficient equipment to adequately conduct the refuse service if granted a permit; and that said vehicles and equipment conform to all applicable provisions of this Ordinance and the California Motor Vehicle Code. He must own, or have access to, suitable facilities to maintain in a clean and sanitary condition all equipment used in the service;

(i) The applicant must show to the satisfaction of the Department that the issuance of a permit is in the public interest and there is a need for a permit to be issued, in that there is an available market for refuse collection and/or transportation which could be legally served by the applicant; and

(j) Such additional information as the Department may require.

(9) If the Department finds that the statements in the application are true and that applicant is capable of complying with the provisions of this Ordinance, and the rules and regulations of the Department, and there is a demonstrated need for additional service in the area, the Director shall recommend to the Board that a permit be issued. If any of the preceding requisites are not fulfilled, a recommendation of denial shall be made.

(10) Permits shall be issued to expire annually on June 30. The annual fee for a permit, or a renewal thereof, prorated on a monthly basis, if necessary, shall be as follows:

Refuse Collector Permit - $300 annually per truck.

Refuse Transporter Permit - $120 annually per truck.

For the purpose of fee assessment, trucks hauling drop-off boxes shall be considered in the Refuse Collector category.

Fees shall be paid, in full, concurrent with the issuance of a permit, or a renewal thereof. Fees are nonrefundable, but are transferable in the case of a replacement within a fleet upon the Director's approval and payment of $50. Fees for trucks added to a fleet during the permit period, other than replacements, will be calculated on a monthly prorated basis. The minimum fee will be $50.

The permittee shall be issued an identification for attachment to each vehicle licensed in accordance with this section. Only such a licensed vehicle shall be used in a permit area.

The foregoing fees shall be paid to the Department and deposited with the County Treasurer. All such fees shall be credited to the County General Fund.

(11) Concurrently with the issuance of a permit, the permittee shall:

(a) Post with the Clerk of the Board a cash bond in the sum of Five Thousand Dollars ($5,000.00) or a surety bond in the same amount furnished by a corporate surety authorized to do business in the State of California, payable to the County of Orange. The bond shall be conditioned upon the full and faithful performance by the Permittee of his obligations under the applicable provisions of this Ordinance and shall be kept in full force and effect by the Permittee throughout the life of the permit and all renewals thereof.

The Board of Supervisors from time to time may by Resolution establish such additional or lower bond requirements as they may deem necessary.

(b) Agree to appear and defend all actions against the County arising out of the exercise of said permit, and shall indemnify and save the County, its officers, employees and agents harmless of and from all claims, demand, actions or causes of actions of every kind and description resulting directly or indirectly, arising out of, or in any way connected with the exercise of said permit.

(c) Obtain and keep in force during the term of the permit, public liability and bodily injury insurance in an amount not less than $200,000.00 for injuries or death to any one person and not less than $600,000.00 for the injuries or death to more than one person arising out of any one accident or occurrence; property damage liability insurance in an amount not less than $100,000.00; and Workmen's Compensation Insurance covering all employees of the permit holder. Copies of such policies, or certificates evidencing such policies, shall be filed with the Department. The County shall be named as an additional assured. All policies shall contain a provision requiring a ten-day notice to be given to the Department prior to cancellation, modification, or reduction of limits.

The amounts of public liability insurance for bodily injury and property damage shall be subject to review and adjustment by the Board.

(12) Permits shall be renewed annually on July 1 upon application to the Director and providing the permit holder has operated during the period of the expiring permit in conformity with the provisions of this Ordinance and the rules and regulations of the Department; and that he is capable of continuing operation in conformity with the provisions of this or subsequent refuse Ordinances and with the rules and regulations of the Department.

If the foregoing requirements have not and/or cannot be met, the Director may suspend the permit pending a Board hearing for revocation.

Applications for permit renewal must be received by the Department 30 days prior to the permit expiration date, otherwise the renewal may be denied by the Director.

(13) If a permit remains inactive for thirty (30) consecutive calendar days it may be cancelled by the Board.

(14) The permittee shall not sell, assign, or transfer a permit, not any of the rights and privileges granted thereby, without the prior written approval of the Board. Any change in management of a permittee must be approved in writing by the Board. Disregard of any of the preceding is sufficient for Board revocation of the permit. The permittee shall file a statement of ownership when renewing a permit, and at such other times as requested by the Director, and shall verify the same as being true and correct under the penalty of perjury.

(15) Vehicles used in the collection and/or transportation of refuse shall comply with the following requirements in addition to any imposed by any other jurisdictional agency:

(a) Truck bodies shall be constructed of metal with all joints and seams welded. The body shall be leakproof.

(b) Vehicles shall be equipped with devices capable of covering every open section of the body where refuse may be placed.

(c) Trucks over 3/4 ton capacity shall be equipped with a device for mechanical unloading.

(d) The licensee's name or firm name, together with his telephone number and street address shall be printed or painted in legible letters, not less than three inches in height, on both sides of the truck or conveyance.

(e) The vehicles shall be maintained at all times in good mechanical condition. They shall be clean, sanitary, and painted to the satisfaction of the Director.

(f) Vehicles shall be inspected at the discretion of the Department.

(g) Vehicles not properly maintained is sufficient cause for the Director to suspend the permit.

(16) Residential refuse collection shall be made only between the hours of 6:00 A.M. and 8:00 P.M. Monday through Saturday on a schedule that must be approved by the Department.

Residential collections shall be made at least once weekly. The Permittee will provide an unlimited quantity collection service. The collector is not required to pick up dirt, rocks, building material, furniture, appliances, water heaters or other bulky items or any object weighing more than fifty pounds or longer than six feet. Special arrangements for the removal of these items may be made between the collector and the resident and the charges therefor will be agreed between them.

The schedule for the other type collections shall be mutually agreeable to the customer and the collector and approved by the Department. The Director may prescribe the intervals and times of collection.

(17) Service complaints shall be investigated by the Department and unless a satisfactory settlement is effected the Board may be requested to hold a hearing by any of the parties involved, including the Department. Unsatisfactory service is sufficient cause for the Director to suspend a permit pending a Board hearing for revocation.

(18) Permittees shall maintain an office at some fixed place within the County and shall maintain a listed telephone thereat. Such listing shall be in the firm name and shall be on the exchange

of the area serviced or a toll-free number. The permit holder shall during the hours between 8:00 A.M. and 5:00 P.M. of each day except Saturdays, Sundays, and holidays, have a competent adult person at said office for the purpose of answering inquiries and receiving complaints from customers. The permit holder shall notify the Department in writing seven (7) days prior to any change in business address, or telephone number. Such notice shall set forth the revised information.

(19) A permit may be suspended by the Director when the permittee violates any provision of this ordinance or any rule or regulation promulgated by the Director. The notice of suspension will be in writing and delivered in person or by registered or certified mail, to the business address of the permittee appearing on the permit application. Suspension can be for an indefinite period. The effective date of suspension shall be noted in the notice to suspend. During the suspension period the Director may make such arrangements with others as are necessary for furnishing collection or transportation services in the area.

A permit suspension or revocation is cause for legal action against the performance bond.

(20) Any person who is dissatisfied with any decision or ruling of the Director under the provisions of this Ordinance may appeal to the Board, who shall have the power to grant or deny such appeal. Said appeal shall be taken by filing with the Clerk of the Board of Supervisors a Notice of Appeal within ten days after the date of said decision or ruling as entered in the minutes of the Department.

(21) No person shall convey or transport solid wastes upon or along any public highway in the County unless such solid waste is contained and/or covered or otherwise secured so as to prevent it from leaking, dripping, falling, blowing, or scattering from the vehicle in which it is being conveyed or transported. All vehicles and equipment used in the transport of any form of refuse shall be kept clean. No person shall drain the liquid from any such vehicle upon any road or highway or upon any other land in such a manner as to create an unsanitary condition. Persons hauling solid wastes on the public highways shall completely empty the solid wastes from their vehicles and/or containers at the disposal site, or recover them if they are not completely emptied, in order to prevent the scattering of residue on the return trip.

(22) The Director shall have the power and duty to promulgate rules and regulations to regulate the collection and/or transportation of solid waste in the unincorporated areas of the county.

Section 6: Solid Waste Disposal

(1) It shall be the sole responsibility of the Board to establish, set aside, or designate locations within the County to be used as public solid waste disposal sites. These sites shall be known as County Disposal Stations.

(2) It shall be unlawful for any person to place, deposit or dump or cause to be placed, deposited or dumped any solid waste in or upon any private property into or upon which the public is admitted by easement or license or upon any private property without the consent of the owner or in or upon any street, alley, public highway or road in common use or upon any public park or other public property other than property designated or set aside as a County Disposal Station for such purpose by Resolution of the Board.

(3) It shall be unlawful for any person to place, deposit or dump solid waste of any kind whatsoever upon any private or public property within a distance of one thousand (1,000) feet from any public highway in the County of Orange, or within a distance of five hundred (500) feet from any established residence or dwelling house within said County of Orange, or to cause or suffer or permit such solid waste to be placed, deposited, or dumped upon any public or private property within a distance of one thousand (1,000) feet of any public highway or within a distance of five hundred (500) feet of any established residence or dwelling house in the County of Orange, without first having obtained a use permit pursuant to the zoning laws of the County of Orange, as now or hereinafter amended, or pursuant to any other zoning law that may be hereinafter adopted in the place and stead of said zoning laws of the County of Orange.

(4) All County Disposal Facilities shall be under the supervision of the Director who shall have the power and duty to promulgate rules and regulations regulating the use by the public and the operation of such Disposal Facilities. Any rule adopted by the Director pursuant to this Section shall be posted in a conspicuous place at the Disposal Facility to which it pertains, and the violation of any such rule shall constitute a violation of this ordinance.

(5) The Director is hereby authorized and directed to erect and maintain signs upon County Disposal Stations, which signs shall designate those areas where the dumping of solid wastes is permitted. It shall be unlawful for any person to place, deposit or dump solid wastes in any form in or upon the County Disposal Station except in those areas or portions thereof designated by such signs erected by the Director. It shall be unlawful for any person to place, deposit or dump solid wastes in any form in areas or portions of such County Disposal Stations designated by signs erected by the Director as areas wherein the dumping of solid wastes is prohibited.

Section 7: Disposal Restrictions

(1) It shall be unlawful for any person to place, deposit or dump or cause to be placed, deposited or dumped any hazardous wastes, swill, offal, dead animal carcasses, dead fowl, dead fish or objects longer than six (6) feet in or upon a Disposal Station unless special permission is granted by the Director.

(2) It shall be unlawful for any person to place, deposit or dump auto bodies, tree stumps or similar bulky refuse in any County Disposal Station except those stations as are designated for the dumping of such wastes by the Director.

(3) It shall be unlawful for any person to place, deposit or dump any industrial waste in any County Disposal Station except for those kinds of industrial wastes, and in those County Disposal Stations, as are designated for the dumping of such wastes by Resolution of the Board.

(4) It shall be unlawful for any person to place, deposit or dump any liquid waste in any County Disposal Station other than those stations designated for the dumping of such waste by Resolution of the Board.

(5) It shall be unlawful for any person in the absence of an agreement authorizing the same entered into between the County and any federally operated military or naval establishment to dump solid waste originating from said military or naval establishment in any County Disposal Station.

(6) It shall be unlawful for any person to place, deposit or dump or cause to be placed, deposited or dumped in or upon any County Disposal Station any solid wastes originating outside of the County of Orange. In any prosecution for the violation of this Section, it shall be presumed that any refuse brought to or deposited, dumped or caused to be brought, placed, deposited or dumped in or upon any County Disposal Station by any person who is not an inhabitant of the County of Orange and not regularly engaged in the business of collecting refuse, is refuse originating outside of the County of Orange. The Director may require a person, suspected of having refuse originating outside the County in his possession and in the process of disposing of it in a County Disposal facility, prove under the penalty of perjury the origin of the refuse. The form of proof shall be determined by the Director.

(7) It shall be unlawful for any person in or upon any County Disposal Station to salvage or collect therein, or remove therefrom any trash, junk or other materials or substances whatsoever, except with the written permission of the Board.

(8) It shall be unlawful for any person in or upon any County Disposal Station to enter, remain or loiter therein for any purpose except the purposes authorized herein.

Section 8: Industrial Waste Disposal - The provisions of Article 4, of the Health, Sanitation and Animal Regulations, of the County of Orange are hereby adopted and made a part of this ordinance.

Section 9: Exceptions - No provision of this ordinance shall apply to the use of solid wastes in normal farming operations or in the processing or manufacturing of other products in a manner that will not create a public nuisance or adversely affect the public health; and, provided further, that these provisions shall not apply to an individual disposing of solid wastes originating from his own residence onto land or facilities owned by him when disposal of such wastes do not thereby create a public nuisance or adversely affect the public health.

Section 10: Enforcement and Administration

(1) The general provisions of this ordinance and the rules and regulations adopted pertaining to the public health, safety, and well-being of the public shall be enforced by the Health Officer. He shall be empowered to investigate any violation of this ordinance, and, for such purposes, he shall have the powers of a peace officer. This enforcement responsibility shall apply to all solid waste handling activities within the unincorporated area of the County. If necessary, and after proper notice and hearing, he may abate a nuisance and the person having control or possession of the premises abated will be liable to the County for the costs of such abatement. These costs may be recovered in a civil action.

(2) The Director shall be responsible for the operation, care, administration and management of all the County disposal facilities and refuse collection and transportation in the unincorporated area.

Section 11: Plan for Solid Waste Disposal - As an integral part of a solid waste management program, a plan for solid waste disposal shall be developed by the Department, whose responsibilities, powers and duties relating to such plan shall be as follows:

(1) Develop, maintain, revise, and perpetuate a County-wide regional disposal system which shall include the establishment of disposal stations, transfer stations, and other facilities.

(2) Administer the solid waste disposal system.

(3) Operate and maintain all such disposal facilities.

(4) Advise, consult, and cooperate with other county agencies, with appropriate federal, state, and local units of government

and with appropriate private organizations, and industries in the formulation and carrying out of the disposal program and its other duties.

(5) Exercise supervision of the use of established disposal facilities and enforce, through the proper channels, the rules and regulations established for such use.

Section 12: Review Procedures - The program for solid waste disposal shall be reviewed annually in accordance with the requirements of the General Planning Program and within the framework of the Planning-Programming-Budgeting System.

Section 13: Approval of Waste Disposal Facilities - The Director, in establishing disposal facilities, shall comply with all applicable federal, state, county, and city laws and regulations relating to air and water pollution and protection of public health.

Approval and/or permits for the operation of disposal facilities shall be obtained from the:

(1) Applicable City, if the facility is proposed in incorporated territory.

(2) Planning Department, for compliance with zoning regulations and/or the general planning program for facilities in unincorporated areas.

(3) Board of Supervisors for property acquisition.

(4) County Water Pollution Department, for determination of conformity of operational plans and site physical characteristics (i.e., geology, hydrology, and topography) with ordinances relating to pollution of any underground or surface waters of the county, and the setting of disposal conditions and requirements;

(5) State Regional Water Quality Control Board, when necessary, for final operational requirements, site classification, discharge requirements, and types of wastes which can be deposited; and

(6) Any State Department that may require a facility registration certificate.

Section 14: Advisory Council

(1) An advisory council is hereby created to provide consultation and advice to the Board concerning all matters relevant to the management of solid wastes in Orange County.

(2) The council shall review, discuss, advise, and recommend to the Board, as deemed necessary, on all matters pertaining to

rules, regulations, standards, local ordinances, and practices governing solid waste handling and the total program of solid waste management for the County.

(3) The council shall consist of ten persons who shall be appointed by the Board from the following agencies:

One member each from:

(a) County Health Department

(b) County Road Department

(c) Office of the County Counsel

(d) Orange County Rubbish Association

(e) County Sanitation Districts

and five members representing the city governments of the County.

(4) The duration of term of each member shall be as determined by the Board.

(5) The council shall meet at least annually, or at more frequent intervals at the discretion of the Board.

Section 15: Technical Advisory Committee

(1) A technical advisory committee is hereby created to provide consultation to the Director concerning all matters pursuant to the provisions of the solid waste disposal plan.

(2) The committee shall be appointed by the Director, membership of which shall include one representative each of the following County Departments:

(a) Water Pollution Department

(b) Health Department

(c) Air Pollution Control District

(d) Planning Department

(e) Department of Harbors, Beaches and Parks

The Director may invite and appoint such other members as he considers desirable from such other public and private organizations as are willing to serve on the committee on a

voluntary basis; such appointments shall be made with due regard to the interests of the public, city government, industry, and the refuse removal industry.

(3) The chairman of the committee shall be the Director; and the committee shall meet at the discretion of the Director.

(4) The primary functions of the committee shall be the promulgation of a regional solid waste disposal program and the master plan for solid waste disposal, including, but not limited to, the following:

(a) Formulation, updating and aiding in the implementation of a regional planning program for solid waste disposal;

(b) Aiding in the integration of the program with other public, private, and county planning programs; and

(c) Advising and recommending the adoption, amendment, or repeal of such rules, regulations, policies, standards, and procedures as it deems necessary for the administration and conduct of the waste disposal program.

(5) The committee shall be furnished necessary staff services and facilities as needed by the Department.

Section 16: Integrated Planning - The Planning Director shall work closely with the Director, assisting him to the maximum extent possible in the planning for disposal facilities, integrating such planning with all other land use planning, and the county general planning program, to assure that solid waste disposal facilities are planned and designed compatible with planned land use and that beneficial reuse of disposal sites is maximized.

Section 17: Severability Clause - The provisions of this ordinance are severable and if any provisions or part thereof shall be held invalid or unconstitutional or inapplicable to any person or circumstance, such invalidity, unconstitutionality, or inapplicability shall not affect or impair the remaining provisions of the ordinance.

Section 18: Saving Clause - Nothing in this ordinance except as stated, shall be deemed to affect, modify, amend or repeal any provisions of any ordinance, or resolution now in existence pertaining to the disposal of solid wastes, sewage and refuse disposal, health, sanitation, and animal regulations, or any subject whatsoever.

Section 19: Penalty - Any person violating any of the provisions of this ordinance shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not more than One Thousand Dollars ($1,000.00) or by imprisonment in the County Jail for a period of not more than 100 days, or by both such fine and imprisonment.

Features of Ordinance

It is to be noted that the proposed ordinance is written to treat conditions in Orange County, and contains certain features or provisions which are applicable only to Orange County and which would not be relevant elsewhere in the State or nation. Certain of these features are explained below:

(1) Orange County operates sanitary landfills and transfer stations and makes no direct charge for their use. Operational expenses are financed from the County general tax. Consequently, refuse of any kind originating outside the County is prohibited from being disposed of at County disposal facilities. This is often quite difficult to enforce, but has not been a major problem.

(2) Almost all collection in the County is performed by private refuse collectors. New provisions are being provided to control, upgrade, and standardize the quality of service of these private collectors.

(3) Provisions requiring that a use permit must be obtained also provide that no solid wastes be deposited within 1,000 feet of a highway and 500 feet of a residence. This may seem illogical, inasmuch as a residence would certainly find sanitary landfills more objectionable than a passing motorist. However, the 1,000 feet requirement is in essence an "anti-litter" provision, in lieu of a separate ordinance for such purposes. These provisions and restrictions apply both to County operated facilities and to those operated by private persons within the County.

APPENDIX A

LIST OF REFERENCES

(1) "First Annual Report, Maximum Utilization of Sanitary Landfills Through Integrated Regional Planning," by the County of Orange Road Department and Engineering-Science, Inc., for Department of Health, Education, and Welfare, PHS, Solid Wastes Program, Grant No. 1-D01-UI-00113-01, April 1969.

(2) "Master Plan of Refuse Disposal" by the Orange County Highway Department, October 1959.

(3) "Development of Construction and Use Criteria for Sanitary Landfills First Annual Report," by the County of Los Angeles, Department of County Engineer and Engineering-Science, Inc., October 1968.

(4) "Development of Construction and Use Criteria for Sanitary Landfills Second Annual Report," by the County of Los Angeles, Department of County Engineer and Engineering-Science, Inc., August 1969.